REPORT ON LOCATION AND UTILISATION OF WASTELANDS IN INDIA

PART X—UTTAR PRADESH

WASTELANDS SURVEY AND RECLAMATION COMMITTEE
Ministry of Food and Agriculture
GOVERNMENT OF INDIA
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PREFACE

The report deals with the availability and location of wastelands in large-sized blocks in Uttar Pradesh, and the measures to be taken for their reclamation.

2. With a view to acquiring some knowledge of the wastelands in the State, we undertook tours of some representative areas. It was, however, not possible to visit all the areas offered for reclamation, nor was this considered necessary.

3. During out first visit on the 30th March, 1960, we saw the work being done at the Banthra Farm, near Lucknow, where practical methods of reclamation of *usar* lands are being investigated. During our second visit from the 3rd to 6th February, 1961, we saw wastelands in the districts of Fatehpur, Kanpur and Pilibhit. On the 3rd February, 1961, we paid a visit to the Bilanda and Habeeb Farms at Fatehpur, where *usar* land had been reclaimed by Shri Bishan Man Singh. On the 4th February, 1961, we visited some State *usar* reclamation centres in the Lucknow and Kanpur districts. On the same day, we held discussions with the State officials regarding the availability and disposal of *usar* lands found in the State. On the 6th February, 1961, we visited the wastelands in the Pilibhit district, and also saw the colonisation work undertaken by the State Government at Sampurnanagar, in the Kheri district. On the 23rd December, 1961, the draft report of the Committee was discussed and finalised.

4. We wish to express our gratitude to Dr. R. N. Mathur, Additional Director of Agriculture, Uttar Pradesh, who, in his capacity as Liaison Officer, was most helpful in the collection of data required by the Committee. We are indebted to Professor K. N. Kaul, Director, National Botanic Gardens, Lucknow, for showing us round the Banthra Farm and explaining to us the methods evolved at the Farm for the reclamation of *usar* lands. Our thanks are also due to Dr. R. R. Agarwal and Dr. A. D. Khan, of the State Agriculture Department, for assisting us in collecting certain data and in furnishing much useful information. We are also thankful to Shri Shripati Singh, Colonisation Officer, Pilibhit Colonisation Scheme, for showing us round the settlement scheme in the Kheri district. Finally, we wish to record our appreciation of the interest shown by Shri Bishan Man Singh in the Committee's work, and in showing us round his farms.

5. We are highly indebted to Dr. S. P. Raychaudhari, formerly Chief Soil Survey Officer, Indian Agricultural Research Institute, for furnishing the data on the soils of the State, and for allowing us to make use of the facilities of the cartographic laboratory at the Institute for printing the maps included in the Report.

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INTRODUCTION

Appointment of the Committee and the terms of reference

The uncultivated lands in the country may be broadly classified into the following two categories :—

(a) Lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of *abadis,* and

(b) Lands in large-sized blocks which have either gone out of cultivation or have never been brought under cultivation.

2. With a view to utilising the latter category of lands which afford the greatest promise for increased agricultural production, the Government of India constituted a Committee, *vide* their letter No. F/1024/Spl./59, dated the 11th June, 1959 (Appendix A)*, with the following terms of reference :—

(i) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement,

(ii) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonisation and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis),

(iii) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operative, and

(iv) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. In order to ensure effective co-ordination and speedy completion of the work, each State Government/Union Territory was asked by the Government of India to appoint a fairly senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. This procedure facilitated the work of the Committee to a great extent in obtaining relevant data from the State Governments and in arranging the tours.

Programme of work

4. The Committee held its first meeting on the 7th July, 1959, when it discussed the plan of work and the staff requirements. In the second meeting held on the 4th August, 1959, a draft questionnaire was discussed and finalised. The questionnaire (Appendix B) was issued to all the State Governments and Union Territories, with a request that their replies should

be forwarded to the Committee by the 25th September, 1959. This questionnaire sought information mainly on the availability of wastelands in blocks of 1,000 acres or more and the prospects of resettlement in each State. Subsequently, as a result of the Committee's discussions with the Liaison Officers of the Punjab and Madhya Pradesh, it was felt that the availability of wastelands in blocks of 1,000 acres or more might be limited, and it was decided to obtain detailed information in respect of all blocks of wastelands measuring 250 acres or more. Accordingly, a letter was issued to all the State Governments (Appendix C) asking for this information.

5. It was laid down in the terms of reference that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up investigation in another State. The Committee, however, felt that such a procedure was neither feasible nor advisable as the different State Governments did not have the information required by the Committee readily available and the process of collection took some time. In some cases, special surveys had to be organised. The Committee, therefore, decided that it might take up investigations in respect of the following eight States together in the first phase, *viz.* Punjab, Madhya Pradesh, Bihar, Kerala, West Bengal, Orissa, Andhra Pradesh and Mysore, and then take up the remaining States. But for this procedure, the work of the Committee would have been very much delayed.

6. After the reports in respect of the different States have been submitted, a general report covering the entire country will be presented which, *inter alia,* will deal with priorities between the different categories of reclaimable lands in the different States.

7. The report for each State will be divided into four sections. Section A will contain general observations about the State regarding its climate, soils, crops growth, irrigation facilities available, etc. Section B will deal with the areas offered for reclamation, their general characteristics, measures necessary for bringing the wastelands under cultivation, and the cost of reclamation. Section C will contain suggestions for follow-on and resettlement operations, if any, the estimated additional production from the reclaimed areas, and priorities between the different categories of reclaimable lands. In Section D, a summary of general conclusions and recommendations will be presented.

Problem

8. The main object of the Committee was to make a survey of lands classified as "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows", and locate large blocks for reclamation and resettlement.

9. In order to avoid ambiguity in the appraisal of the lands available in each of the above two categories, it is necessary to define the two terms. The classification of land-use adopted by the Directorate of Economics and Statistics, Union Ministry of Food and Agriculture, is nine-fold as under :—

(i) forests,
(ii) barren and unculturable lands,
(iii) land put to non-agricultural uses,
(iv) permanent pastures and meadows,

(v) areas under miscellaneous trees and crops,
(vi) culturable waste,
(vii) current fallows,
(viii) fallows other than current fallows, and
(ix) net area sown.

The lands classified under categories (iv), (v) and (vi) are grouped together and designated as "other uncultivated lands excluding fallow lands". The category "culturable waste" is defined to include all lands available for cultivation but not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be fallow for more than five years and may be covered with shrubs and jungle. They may be assessed or unassessed, and may lie in isolated patches or blocks or within cultivated holdings. Lands reserved as pastures for grazing are not included under "culturable waste". Similarly, fallows of one year are classified as "current fallows", while those of 2—5 years are classified as "fallows other than current fallows". Lands left for growth of miscellaneous trees like bamboo, casuarina, fuel trees, etc. are not classified as "culturable waste".

10. Although the classification suggested by the Ministry of Food and Agriculture has been adopted in all the States, the Committee was informed during the course of discussions with the State officials that the concept of "other uncultivated lands excluding fallow lands" was not yet clearly understood. Lands which were classified as "culturable waste" at the time of settlement some years ago still continue to be shown as such in the revenue records even though they cannot be made culturable after incurring any reasonable expenditure. Similarly, some of the lands which are culturable continue to be classified as barren and unculturable or pasture lands. In some other cases, the pasture lands have been included in the category of culturable waste. Further, the category "other uncultivated lands excluding fallows" is treated as a sort of residual class in which are included all lands not accounted for under any other class.

11. In view of these considerations, we are of the view that the areas included in the two categories, *viz.* "other uncultivated lands excluding fallow lands" and "fallow lands other than current fallows" may not fairly represent the actual extent of culturable wastelands in the country, and accordingly much reliance cannot be placed on the statistics supplied by the State Governments. The mere collection of statistics under the head "culturable waste" can serve but little purpose unless detailed information on the types of wastelands available in each State, the ownership of such lands, their availability in sizeable blocks and the cost of reclamation measures is available. We were glad to note that some of the States had realised the importance of collecting such statistics and had either started the necessary surveys or were preparing to do so for achieving the above object. This is a step in the right direction and any assistance that the Central Government can give in this matter will greatly facilitate the collection of vital statistics on proper land use. For the purpose of our report, we have relied on the data furnished to us by the revenue/agricultural agency of each State.

12. As regards resettlement, the terms of reference of the Committee enjoin upon it to locate areas where large blocks of land are available for reclamation and resettlement. We consider that the resettlement work is not the be-all and the end-all of our labours and that the main job is to

locate lands which can be reclaimed and brought under the plough for increasing the food resources of the country. We have, therefore, suggested resettlement schemes only in cases where food production would be hindered without resettlement work.

13. We have viewed the entire problem mainly from an agricultural angle, but at the same time, we have tried to deal with matters which go beyond the purely agricultural aspects of the subject, for we do recognise that the problem of utilisation of wastelands involves not merely the adoption of agricultural techniques but an appreciation of a variety of human and social aspects.

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PART X

UTTAR PRADESH

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Section A

GENERAL ASPECTS

1. The State of Uttar Pradesh consists of 54 districts, *viz.*, Dehra Dun, Saharanpur, Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Mathura, Agra, Mainpuri, Etah, Bareilly, Bijnore, Budaun, Moradabad, Shahjahanpur, Pilibhit, Rampur, Farrukhabad, Etawah, Kanpur, Fatehpur, Allahabad, Jhansi, Jalaun, Hamirpur, Banda, Varanasi, Mirzapur, Jaunpur, Ghazipur, Ballia, Gorakhpur, Deoria, Basti, Azamgarh, Nainital, Almora, Garhwal, Tehri-Garhwal, Lucknow, Unnao, Rae Bareli, Sitapur, Hardoi, Kheri, Faizabad, Gonda, Bahraich, Sultanpur, Pratapgarh, Barabanki, Chamoli, Uttar Kashi and Pithorgarh. The total geographical area of the State is 1,13,049 sq. miles.

2. The population of Uttar Pradesh, according to the 1951 census, is about 6.3 crores, which gives an average density of 557 persons per sq. mile as compared to 287 for the country as a whole. Uttar Pradesh is the most populous State in the country. Of the total population, nearly 74 per cent is engaged in agriculture.

3. Based on the physical features, the natural divisions of the State are the Himalayas in the north, the Gangetic plains in the centre, and the plateau to the south of the Yamuna. Agriculturally, the State may be divided into following divisions :—

(i) The Himalayan region in the extreme north,
(ii) the Sub-Himalayan or submontane region (*Tarai* and *Bhabar*),
(iii) the Gangetic plains,
(iv) the plateau comprising the Bundelkhand tracts, and
(v) the Vindhya hills in the south-east corner of the State.

4. The Himalayan region in the north is a hilly tract, which is characterised by steep slopes. These hills contain little level land, which is not very fertile due to constant soil erosion.

5. The Sub-Himalayan or submontane region is a narrow belt at the foot of the Himalayas from the district of Dehra Dun to Deoria. This tract is popularly known as *tarai* and *bhabar*. Until recently it was largely unexplored but has now the second largest State farm in India, which is the centre of the first Agricultural University in the country. The *bhabar* tract lies immediately to the north of the foot-hills and is covered with trees and under-growth. The *tarai* is full of marshes, and here tall grasses replace forests. Much of the rain-water which percolates through the gravelly slopes of the *bhabar* tracts re-issues as springs or streams in the *tarai* region.

6. The alluvial plains of the Ganges and its tributaries are the richest and the most populous portion of the State. The alluvial deposits are classified into older and newer formations. The former formations called *bhangar* or high land are liable to denudation, and generally contain *kankar*. The newer deposits are called *khadar* or low lands and do not, as a rule, contain *kankar*. There are, however exceptions in both cases.

7. Towards Jhansi in the south is the Bundelkhand tract. By far the commonest rock of the lower Bundelkhand is gneiss. Low hills and rocky spurs with jungles of stunted trees are a distinctive feature of this tract.

8. The major portion of the Mirzapur district forming the south-eastern corner of the State lies within the Vindhyan ranges. The important ranges of these hills are the Upper Vindhyas in the north, the Kaimur ranges in the centre, and the lower Vindhyan rocks in the southern portion of the district.

Climate

9. The climate of Uttar Pradesh is hot and dry in summer, and mild and free from frost in the cold season. Extreme heat is experienced before the rainy season, and in the autumn there is again a slight rise in temperature without the humidity showing any proportionate fall. The greater portion of rainfall occurs in the summer from June to September, while the winter rains are received from December to February. The annual rainfall is low in south-western U.P., but increases as one proceeds towards the east and the northern hill districts of the State, being more than 90 inches in the Dehra Dun district. The State can be divided into six zones as follows based on the amount of annual precipitation :—

Zone	Districts	Annual rainfall (inches)
I	Mathura, Agra, Aligarh, Bulandshahr, Etah, Meerut, Mainpuri, Muzaffarnagar.	20—30
II	Etawah, Farrukhabad, Jalaun, Kanpur, Budaun, Unnao, Hamirpur, Jhansi.	30—40
III	Fatehpur, Hardoi, Rae Bareli, Lucknow, Saharanpur, Pratapgarh, Allahabad, Sitapur, Rampur, Moradabad, Banda, Barabanki, Shahjahanpur, Jaunpur, Ghazipur, Faizabad, Azamgarh, Varanasi, Sultanpur, Ballia, Bijnore, Mirzapur, Kheri, Bahraich	40—45
IV	Bareilly, Gonda, Basti, Deoria, Gorakpur, Pilibhit ..	45—50
V	Garhwal, Almora, Nainital, Tehri-Garhwal, Chamoli, Uttar Kashi and Pithorgarh.	50—70
VI	Dehra Dun	above 70

10. The Gangetic alluvium of the State may be divided into the following five climatic regions depending upon the distribution of the Lang's rain factor :—

Lang's rain factor	Climatic region
Below 31	Semi-desert
31—40	Arid
41—50	Semi-arid
51—60	Sub-humid
Above 60	Humid

11. According to Meyer's N. S. quotient, the soils of the State may be classified as below :—

N. S. Quotient	Region	Soils
Below 75	Mainpuri, Agra	Grey steppe or semi-desert
75—100	Kanpur, Meerut	Grey steppe or semi-desert
100—125	Lucknow, Allahabad, Varanasi	Semi-desert
125—150	Bahraich, Bareilly, Roorkee	Chestnut brown, semi-arid.
150—175	Gorakhpur	Chernozem, sub-humid
Over 175	Dehra Dun	Submontane, humid

Soils

12. In the hill regions the soils are formed *in situ* over a rock substratum. The soils in the valley and the plains are transported and are alluvial in nature. A brief account of the soils found in the different regions of the State is given below (*vide* Map I).

12.1. The soils in the hill region are brown forest soils, podsolic soils and Wiesenboden or meadow soils. The brown forest soils are productive.

12.2. Until recently the *tarai* region was largely unexplored. A detailed soil survey of the *tarai* farm has revealed that there are five textural-*cum*-calcimorphic soil associations. They are *matkota* clay loam; *matkota* loam which is highly calcareous; *matkota* loam which is slightly calcareous; *matkota* loam which is non-calcareous, and *matkota* sandy loam. These soils are productive and contain initial reserves of nitrogenous plant food which are depleted within a few years on intensive cultivation. These soils respond well to the application of phosphatic fertilisers.

12.3. The soils of the Ganga basin have been formed as a result of detritus brought down by the Ganga and its tributaries. The main soil types are sand, clay and loam. The loamy soils are most widely prevalent. In the river valleys, the *khadar* lands consist mostly of light soils of sandy nature. In the flooded areas, layers of sand alternate with fertile layers of sediments left behind by the receding floods. Near depressions, the soil is generally hard and clayey and rich in organic matter.

12.4. The soils in the Bundelkhand tract are non-alluvial in nature, and are formed by the disintegration of the Deccan trap. Three genetic types are recognised. Type Bundelkhand I is reddish-brown, coarse-grained and very shallow in depth. The soils are poor in colloids and plant nutrients, and are of open texture. They are found in high-lying areas, and yield poor crops. Type Bundelkhand II is found on gentler slopes or on comparatively level land ground. These soils are brown in colour and greatly vary in texture. They are deep and are found in the plains and low-lying areas. They are calcareous and dark-brown to black in colour. They are very fertile. Type Bundelkhand III is found in the plains of the region to the south-west of Kanpur.

12.5. The Vindhyan soils are residual in origin, having developed on the decomposition products of the sub-adjacent rocks of the Vindhyan system. These soils are found in the hilly areas in the Mirzapur district. The three sub-types are as under :—

12.5.1. *Vindhyan uplands.*—These soils are found in high lands, and are alluvial in nature. They are coarse-grained, red and very shallow. Along mountain slopes, they are badly eroded. They are poor in fertility.

12.5.2. *Vindhyan flats.*—These soils are formed under conditions of restricted drainage. They are slightly undulating to gently sloping. They are somewhat fine-grained, deeper and have greater capacity for retaining moisture.

12.5.3. *Vindhyan lowlands.*—These soils are found in low-lying situations, and are alluvial in nature. They are very fertile and most suited for growing paddy.

13. The important crops grown in the different zones are as under :—

Zone	Crops
Semi-desert	Bajra, jowar, barley, gram, cotton, *urd* and mustard.
Arid	Jowar, maize, wheat, barley, bajra, pulses, cotton, groundnut, mustard, peas and sugarcane.
Semi-arid	Paddy, maize, sugarcane, barley, wheat, *arhar*, bajra, groundnut, peas, gram and linseed.
Sub-humid	Paddy, maize, *arhar*, sugarcane, wheat, barley, smaller millets and peas.
Humid (hill region)	Paddy, wheat, smaller millets, peas and fruits.
Bundelkhand	Jowar, sesamum, gram, wheet, linseed and barley.

14. Large tracts in the State (estimated at 3 million acres) are lying waste and have been rendered unproductive due to development of alkalinity and salinity in the soil. The affected lands are called *usar*, *reh*, etc. These lands are formed as a result of salt action in areas of defective drainage. In *usar* lands soil degeneration is due to the replacement of calcium by sodium in the soil complex. When the *usar* lands are impregnated with salts, the glistening, white efflorescence on the surface is known as *reh*. The *usar* tract is largely confined to the Ganga-Yamuna doab. It extends from the Hindan river in the Meerut and Muzaffarnagar districts to the confluence of the Ganga and Yamuna in the Allahabad district. From Kanpur, it branches off to the Unnao, Lucknow and Hardoi districts in the north and north-west, and towards the east and north-east to the Rae Bareli, Pratapgarh, Sultanpur, Jaunpur and Azamgarh districts. Small areas of *usar* and *reh* lands are found all over the State. The extent of *usar* lands is growing rapidly, and their reclamation has become an urgent problem. Some of these lands respond favourably to the reclamation techniques involving the mechanical ripping of the hard, impermeable sub-surface pan, leaching down of salts with the irrigation water, etc., but the alkaline lands which are hard and compact, are more difficult to reclaim.

Irrigation

15. The total irrigated area in the State during 1957-58 was 12.13 million acres out of a total cropped area of 50.29 million acres. Wells including tube-wells account for an area of 5.93 million acres. Canals account for an area of about 4.66 million acres, and tanks and other sources for the remaining area. The main crops under irrigation are wheat, sugarcane, peas and rice.

Natural vegetation, crops grown and yields obtained

16. *Hilly regions.*—The hilly areas of the State are rich in forests of different species of oak, *Pinus longifolia* (chir) and bamboo. The important grasses and weeds in the region are *Imperata arudinacea, Heteropogon contortus, Anrdropogon micranthus, Arundinella setosa, Argemone mexicana,* etc.

17. The *bhabar* and *tarai* tracts contain *Shorea robusta* (sal) and tall grasses intermingled with weeds. In the Bundelkhand region, the vegetation is composed of ber (*Ziziphus rotundifolia*), dhak (*Butea frondosa*), etc., whereas in the alluvial soils, the vegetation is similar to that found in the plains of the Punjab.

Particular mention may be made of—

(i) *Trees* :—Shisham (*Dalbergia sisso*), kikar (*Acacia arabica*), ber (*Zizyphus Jujuba*), phulahi (*Acacia modesta*), mulberry (*Morus alba*), nim (*Melia indica*), date-palm (*Phoenix sylyestris*), dhak (*Butea frondosa*), jamun (*Eugenia Jambolina*), imli (*Tamrindus indica*), Karir (*Capparis aphylla*), pharwan (*Tamarix articulata*), pipal (*Ficus religiosa*), wan (*Salvadora oleoides*), jhand (*Prosopis spicigera*).

(ii) *Grasses and weeds* :—Dub grass (*Cynodon dactylon*), sarkanda (*Saccharum arundinaceum*), kahi or kans (*Saccharum spontaneum*), baru (*Sorghum halepense*), malha (*Zizyphus nummularia*), pohli (*Carthamus oxyacantha*), maini (*Medicago denticulata*), bathu (*Chenopodium album*), Kashi (*Cichorium intybus*), satyaneshi (*Argemone mexicana*).

18. The principal food crops of the State are rice, wheat, gram, barley, bajra, maize and small millets. Of the cash crops, the most important are sugarcane and oilseeds.

19. During 1957-58, rice covered an area of 9.63 million acres, representing 19.1 per cent of the total cropped area. The total production of rice was 2.33 million tons. The bulk of the area under this crop was contributed by the eastern districts where it is the staple crop. Wheat is the next crop of importance, with an area of 9.26 million acres. It accounted for more than 18.4 per cent of the total cropped area in the State. Wheat is grown mostly in the western districts. Its total production was 2.71 million tons. Gram is the other important crop, covering 12.6 per cent of the total cropped area of the State. Its total production during 1957-58 was 1.41 million tons. The production of jowar was 2.1 million tons, of bajra 2.7 million tons, and of barley 4.4 million tons.

20. Among the commercial crops, sugarcane is the most important, occupying an area of 3.03 million acres. Its production in terms of

gur was 3.07 million tons. The State is the largest sugarcane region in the country. The production of oilseeds which covered an area of 5.56 million acres, was 0.8 million tons. Among the oilseeds, rape and mustard and linseed are important, and their production was 0.5 million tons and 0.08 million tons respectively.

21. The average yields of principal crops grown in the different districts of the State are given in Appendix D.

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SECTION B

DESCRIPTION OF BLOCKS AND MEASURES FOR RECLAMATION

Land utilisation

22. According to the land utilisation statistics for the year 1957-58, the State of Uttar Pradesh has an area of 63.94 million acres classified as under :—

	Acres (millions)
(*i*) Forests	5·78
(*ii*) Land not available for cultivation	
(*a*) barren and uncultured land	2·89
(*b*) land put to non-agriculturable use	4·64
(*iii*) Other uncultivated land excluding fallows	
(*a*) culturable waste	4·29
(*b*) permanent pastures and other grazing lands ..	0·07
(*c*) land under miscellaneous tree crops and groves ..	2·21
(*iv*) Current fallows	0·35
(*v*) Fallows other than current fallows	3·63
(*vi*) Net area sown	40·08
TOTAL ..	63·94

23. It will be observed that the total area classified as "other uncultivated land excluding fallows" and "fallows other than current fallows" is 10.20 million acres. The district-wise distribution of the area under each of the above heads is indicated in Appendix E.

24. Of the total area of 10.20 million acres under the heads "other uncultivated lands excluding fallows" and "fallows other than current fallows", an area of 30,460 acres only has been located in the State for reclamation in blocks of 250 acres or more in eight districts. No blocks of wastelands of the requisite size have been reported from the remaining districts. On an enquiry about the relatively small area having been offered for reclamation, we were informed that the figures reported in the statement of land utilisation might be discounted. For example, it was pointed out that, according to the figures of land utilisation, the total area under "permanent pastures and other grazing lands" in the State was only 70,000 acres, a figure that could hardly be correct. Obviously, large areas of grazing lands had been wrongly included in other categories. It was also observed that most of the wastelands were available in small-sized blocks. On the other hand, the results of soil surveys carried out by the Agriculture Department in the districts of Kanpur, Fatehpur, Aligarh and parts of Mainpuri and Unnao, strongly support the impression that there are large areas of wastelands in the State, since in these five districts alone, over 2.8 lakh acres of wasteland (*usar*) in blocks of 200 acres or more have been discovered (*vide* statement under para 26 below). We, therefore, recommend that a survey of the wastelands in the State should be carried out quickly, as suggested in the introductory chapter

25. The wastelands offered for reclamation in the State may be broadly divided into the following two categories :—

I. *Usar* land, and

II. Lands infested with thick growth of jungle, bushes and shrubs.

26. The distribution of wastelands in categories I and II in the different districts is given below :—

District	Area (in acres) available in category		
	I		II
	(a)	(b)	
Kanpur	7,037	95,866	—
Lucknow	6,581	—	—
Fatehpur	—	6,870	—
Aligarh	—	19,867	—
Mainpuri	—	1,07,171	—
Unnao	—	51,366	—
Allahabad	—	—	250
Banda	—	—	265
Bijnor	—	—	2,028
Jalaun	—	—	5,824
Pilibhit		—	8,475
	13,618	2,81,140	16,842

(*a*) According to the reports of District Collectors.

(*b*) According to soil surveys carried out by the Agriculture Department, Uttar Pradesh. The surveys were carried out only in five districts mentioned above.

27. Map II shows the location of blocks of wastelands in the two categories.

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Details of blocks in different categories

CATEGORY I

28. A few comments in respect of each block are given below, while fuller details are tabulated in Appendix F.

29. *Blocks* 1—15.—These blocks comprise 7,037 acres of *usar* land, and are located in the Bilhour tehsil of the Kanpur district. The soil is highly impregnated with salts, and white, glistening efflorescence is seen all over the surface. The rainfall is 30—35 inches. No irrigation is available.

30. *Blocks* 16—26 comprise 6,581 acres of *usar* land, and are located in the Lucknow tehsil of the same district. As in blocks 1—15, the soil is impregnated with salts. The rainfall is 30—35 inches. Irrigation from a canal is available, but it is non-perennial.

31. It will be seen that only 13,618 acres of *usar* land have been offered for reclamation, whereas the surveys carried out by the State

Agriculture Department have revealed the existence of extensive belts of degraded lands in the districts of Kanpur, Fatehpur, Aligarh, Mainpuri and Unnao. We were also given to understand that, although no surveys had yet been conducted in other districts, salinity and alkalinity were widely prevalent in the soils of the Hardoi, Rae Bareli, Pratapgarh, Azamgarh, Etawah, Agra and Mathura districts. A good deal of experimental work on the reclamation of *usar* lands has been carried out by the Agriculture Department and other agencies in the State, and the methods of reclamation evolved have been adopted with a fair degree of success. A brief summary of this work is given in the following paragraphs.

32. As early as 1938-39, the State Board of Revenue had reported to the *Usar* Lands Reclamation Committee, United Provinces, that the total area of *usar* and *reh* lands in the State was 2.04 million acres. Recent figures collected from the districts indicate that the area affected by salinity and alkalinity has increased and may now be in the neighbourhood of about 3 million acres. In recent years the State Agriculture Department has been conducting surveys of *usar* lands in selected districts with a view to locating areas where large-sized blocks of 200 acres or more are available. The object of the surveys is to obtain information on the physical and chemical nature of the soils, the degree of salinisation, and the possible methods of reclamation. Such surveys have been completed in the districts of Kanpur, Fatehpur, Aligarh, parts of Mainpuri, and Unnao, and it is proposed to extend them to the Etawah, Rae Bareli, Pratapgarh and Azamgarh districts. Based on these surveys, *usar* land is being demarcated into the following classes :—

(i) Land which is suitable for cultivation without any special treatment,

(ii) land which can be made fit for cultivation after it is properly treated, and

(iii) land which is totally unfit for cultivation.

33. The surveys carried out in the districts of Kanpur, Fatehpur, Aligarh, Mainpuri and Unnao have revealed the existence over of 2.8 lakh acres of *usar* lands in blocks of 200 acres or more, and their locations are shown in Maps IIA, IIB and IIC. The Agriculutral Chemist, U.P., estimates the total extent of such lands in large-sized blocks to be over 6 lakhs acres in the State.

34. The term '*usar*' covers a wide range of infertile soils. In general, *usar* land is composed of deep layers of stiff, heavy, poorly-aerated clay, devoid of humus, and containing large amounts of salts which are injurious to all kinds of vegetation. In some cases the surface of the soil is covered with a hard and compact crust having a dirty white or dark brown colour, and in others the infertility of the land is caused by the presence of alkali salts in the sub-soil. *Reh*-encrusted *usar* shows glistening, white efflorescence of salts during dry weather.

35. There are certain types of *usar* which can be reclaimed more economically than others, and it is, therefore, necessary to classify *usar* land so as to suggest appropriate remedies for their utilisation. Broadly speaking, *usar* lands may be divided into the following four classes for reclamation :—

(a) Land of which the permanent water-table is within 6 ft. from the surface, or which is impermeable due to the formation of *kankar* or the existence of an indurated clay pan, or where both these conditions exist,

(b) land where the permanent water-table lies between 6 and 10 feet from the surface, or which is semi-permeable due to the nascent formation of a pan, or where both these conditions exist,

(c) land in which the permanent water-table is beyond 10 ft. from the surface with no hard clay pan, but the clay fraction is in a deflocculated condition so that infiltration is impeded partially or completely, and

(d) land of which the permanent water-table is beyond 10 ft. from the surface, with no hard pan and good permeability.

36. Much of the intractable *usar* land in Uttar Pradesh belongs to class (a). Under suitable management over a period of yeras, this type of land can at best be made to grow grass or such salt-resistant trees as *babul* (*Acacia arabica*) or *ber* (*Zizyphus jijuba*). Lands of class (b) can be rendered fit for cultivation, but the expenditure of time and effort is disproportionately high. The use of soil amendments such as gypsum, press-mud, etc., combined with the application of irrigation water to leach out harmful salts, can be useful in reclaiming lands in class (c), but these amendments are generally too expensive. The soils in class (d) can, however, be readily reclaimed for agricultural purposes by the application of undecomposed bulky organic matter, together with the use of liberal quantities of irrigation water to leach out salts. This class of *usar* land offers the greatest scope for increasing agricultural production, since on a rough estimate, over 50 per cent of *usar* land in the State falls in this class.

37. Experiments on the reclamation of *usar* land have been conducted by the Agriculture Department, Uttar Pradesh, at the State *Usar* Reclamation Farms at Dhakani, in the district of Hardoi, and at Rahimabad and Katiar, in the Lucknow district, and by Professor K. N. Kaul, Director, National Botanic Gardens, Lucknow, at the Banthra Farm. Further research on the reclamation of such lands is in progress. A good deal of useful knowledge about the practical methods of reclamation of *usar* has been accumulated over the past years, and there is great need for the full use of the existing knowledge.

38. Reclamation of *usar* land has been carried out by many individual farmers in a somewhat empirical way, and the pioneering efforts of Shri Bishan Mansingh of Fatehpur are deserving of special mention. The method followed by him was to construct low bunds on *usar* land to hold rain-water to leach out injurious salts from the soil. Large quantities of undecomposed organic matter were also applied to the land. In the partially reclaimed land salt-resistant trees like *babul, ber, nim, shisham,* etc., were planted on the trench and ridge system. The land was reclaimed in a few years. Two farms—Bilanda Farm and Habbeb Farm—have been developed on the most unpromising soil, and the reclaimed land now grows fruit trees, paddy and other crops. Other cultivators in the same area followed Bishan Mansingh's methods, and have reclaimed large areas of *usar* lands into paddy fields.

39. In recent years very valuable work on the reclamation of *usar* land has been done by Professor K. N. Kaul at the Banthra Farm, near Lucknow. The redeeming feature of *usar* lands near the Banthra Farm is

the presence of underground water which has been tapped by the installation of cavity tube-wells at a cost of about Rs. 5,000 per well. The method of reclamation evolved at Banthra consists in the use of rain-water supplemented by irrigation water from tube-wells to leach out injurious salts from the soil, and the application of organic matter in the form of composted leaves and weeds, at the rate of 25 maunds of dry matter per acre. The weed extensively used for the purpose is *Argemone mexicana,* which is dried and mechanically cut into small bits before application to the soil along with irrigation water. Good results have been obtained in the reclamation of *usar* land.

40. The results of experimental work done at the State *Usar* Reclamation Farms at Rahimabad ana Katiar, in the Lucknow district, and at Dhakauni, in the Hardoi district, seem to have established the fact that the reclamation of *usar* land is largely a physical process, and that, except the lands in which the upward movement of water by capillary action and the downward flow of water under the force of gravity take place very slowly, the other type of *usar* land do not offer serious difficulty in reclamation, provided there is ample irrigation water for leaching and adequate supply of bulky organic matter for application to the soil. The following method of reclamation may be recommended for general adoption by the cultivators :—

A. *Usar* land with good infiltration capacity. The presence of *reh* on the surface is a good index of this capacity having not been impaired.

(i) Strong bunds, 4-5 ft. in width at the bottom and 2—2½ ft. in height, should be consrtucted around *usar* fields of convenient size. The cross-section of the bunds should be 7½ to 10 sq. ft.

(ii) The field should be ploughed up in early summer, and paddy straw or other undecomposed (but easily decomposable) bulky organic matter like sugarcane leaves, paddy husk, etc., should be added at the rate of 200—300 maunds per acre, depending upon local availability. (If the soil has a hard clay pan, use a mechanical ripper to break the pan to a depth of 3-3½ ft. from the surface).

(iii) From April onwards about six inches of irrigation water should be kept constantly standing in the field. Leaching should be continued until the month of July.

(iv) In July a late variety of paddy may be transplanted in the field. Where the water-table of the land is below 10 ft. from the surface, leaching operations may be continued during the rainy season also by using rain-water, and no crop of paddy should be taken in the first year. However, if a paddy crop must be grown, it may be transplanted late in August or early in September.

(v) Before the paddy crop is harvested, berseem seed which has previously been soaked in water for 6-7 hours and heaped up for the same length of time, is sown broadcast in the field, care being taken that there is not much standing water in the paddy field at the time of sowing. The last cutting of berseem in April should be ploughed into the field.

(vi) The above process should be repeated in the second year, with this difference, however, that a medium instead of a late variety of paddy should be transplanted in July. The stubble of the preceding paddy crop will constitute the source of organic matter to be applied to the field in April. Berseem should be sown earlier than in the first year, and the last cutting, as before, ploughed into the field.

(vii) If in the second year a moderately good crop of paddy is obtained, this is an indication that leaching has brought the salinity down to fairly low level. The process of leaching and cropping should be continued in the third year.

(viii) In the fourth year *dhaincha* may be sown in the field in April, and ploughed under in June. This is followed by the transplanting of paddy. A good paddy crop may be expected in the fourth year. Paddy may be immediately followed by gram or peas, and for clay soils, paddy-gram or paddy-peas will thenceforth become the normal rotation. If the soils are light, *dhaincha* may be grown as a green manure crop in the rainy season, followed by wheat in the *rabi* season. If the wheat crop is good, the land may be taken to have been reclaimed. However, if the wheat crop is not satisfactory, salt-resistant crops like barley oats, paddy or mustard may be grown for a few more years until the land is able to produce a good crop of wheat.

B. Alkaline *usar* land whose infiltration capacity is very restricted. Such soils have no concentration of salts on the surface (*reh*), and have a tendency to become puddled on the application of irrigation water.

(i) Four tons of gypsum per acre should be ploughed into the field. (This quantity can be varied according to the chemical status of the soil).

(ii) The subsequent leaching and cropping operations for the reclamation of alkaline *usar* land will be the same as for lands of type A.

41. There is hardly any information available on the cost of reclamation of *usar* land of different types. However, as stated in para 36, the lands which have a low water-table and are not impervious to water are much easier to reclaim. Attention should, therefore, be devoted to the reclamation of such types of *usar* lands, since it is economically feasible to free *usar* of good permeability of its deleterious salts. As abundant supply of irrigation water is the key to the successful reclamation of *usar* land, the work of reclamation should be concentrated in areas where the underground water resources are adequate and where less intractable types of *usar* are found in large-sized, compact blocks of wastelands. A cavity

tube-well costing Rs. 6,000 can command an area of 50 acres. On this basis, the cost of reclaiming *usar* land would work out as under :—

	Per acre Rs.
(*a*) Harrowing twice	20
(*b*) Levelling	50
(*c*) Bunding	30
(*d*) Irrigation	150*
(*e*) Compost manure	75
TOTAL	325

N.B. (1) If the soil has a hard clay pan, a mechanical ripper will be needed to break the pan. The cost of this operation will be Rs. 80 per acre.

(2) The stubbles of the preceding paddy crop will constitute the source of bulky organic matter for use in the following year.

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* Includes Rs. 30 towards cost of construction of channels.

CATEGORY II

42. In this category, only 12 blocks comprising a total area of 16,842 acres have been located in the districts of Allahabad, Banda, Bijnor, Bulandshahr, Jalaun and Pilibhit, as per details given below :—

District	Name of Block	Block No.	Area (acres)
Allahabad ..	Dharia	27	250
Banda	Kalchiya	28	265
Bijnor	Bhogpur	29	2,028
Jalaun	Rampur	30	2,050
	Gopalpur	31	1,686
	Parendiwara	32	552
	Lehi Mustaqil	33	1,536
Pilibhit	Ramnagar	34	1,008
	Gunhan	35	1,174
	Bamanpura	36	5,358
	Sungadhi	37	549
	Binaura	38	386

43. *Block* 27 comprising 250 acres is situated in village Dharia, in the Allahabad district. The area is infested with shrubs and weeds and can be cleared by manual labour. The soil is black and the land is flat. The rainfall is about 30 inches. No irrigation is available at present, but shallow wells can be sunk at a moderate cost. The cost of reclamation is estimated at Rs. 50 per acre.

44. *Block* 28 comprising 265 acres is located in village Kalchiya on the right side of the Banda—Allahabad road, and is in the Mau tehsil of the Banda district. The area is infested with weeds and shrubs and can be cleared by manual labour. The land is flat. The soil is black. The

rainfall is about 36 inches. No irrigation is available. The cost of reclamation is estimated at Rs. 50 per acre.

45. *Block* 29 measuring 2,028 acres is located in village Bhogpur, in the Nagina tehsil of the Bijnor district. The area is infested with thick growth of jungle, shrubs and bushes and will have to be cleared with the help of tractors. The soil is black and fertile. No irrigation is available. The rainfall is 40—45 inches. The cost of reclamation is estimated at Rs. 75 per acre.

46. *Blocks* 30—33 comprising 5,824 acres are located in the Jalaun tehsil of the same district. The land is infested with thick growth of bushes and trees and will have to be cleared with tractors. The land is undulating and there are deep gullies formed all over the area. Suitable soil and water conservation measures will be necessary to bring the area under cultivation. The soil is black. The rainfall is 30—50 inches. No irrigation is available. The cost of reclamation is likely to be heavy.

47. *Blocks* 34—38 comprising 8,475 acres are located in the Puranpur tehsil of the Pilibhit district. The land is covered with shrubs, jungle and pernicious grasses, such as *kans, sarkanda,* etc., and will have to be cleared with the help of tractors. The soils are of four types, namely, sandy, sandy loam, silty loam and loam. The rainfall is 40—50 inches. No irrigation is available at present, but tube-wells can be installed for providing perennial irrigation. After reclamation, the land is capable of growing a variety of crops, such as sugarcane, maize, rice, barley, wheat, turmeric, chillies, etc. The cost of reclamation is estimated at Rs. 110 per acre.

48. The total area of wastelands offered for reclamation in category II is small.

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SECTION C

DISPOSAL OF RECLAIMED LANDS FOR CULTIVATION

Nature of ownership of wastelands and their disposal for cultivation

49. In this Section, we deal with the various methods for the disposal and development of wastelands which have been located in the State. It is obvious that these measures would primarily depend upon the nature of ownership of wastelands. In the State of Uttar Pradesh, the wastelands located for reclamation are either owned by the Government or by the Gaon Samaj. A statement showing the breakdown of wastelands in categories I and II according to their ownership is given in Appendix G. It would be observed from the statement that most of the wastelands belong to the Government and only a small percentage to the Gaon Samaj. The following suggestions are offered for the disposal of wastelands in categories I and II.

50. *Category I.*—The question of a suitable organisation for the reclamation of *usar* is important since the work of reclamation involves a large outlay of money and the return on investment in early years is not sufficient to sustain a cultivating family without financial assistance from Government. The result is that *usar* tracts have remained uncared for, and serve mainly as the ground for the exercise of village cattle.

51. As stated in para 36, there are certain types of *usar* land the reclamation of which is economically feasible, and we feel that the State Government should give serious attention to their reclamation for settling landless labourers and the members of the Scheduled Castes and the Scheduled Tribes. However, since the allottees will not have the means to undertake reclamation of *usar* on their own, assistance from Government, both financial and technical, should be forthcoming in ample measure. Accordingly, we suggest that Government should set up an organisation for the reclamation of *usar* lands mentioned in class (d) of para 35, and allot them to landless labourers, etc., after reclamation. During the first two years, each allottee should be paid on the basis of a means test which would take into account the wages for the work done by him against the amount required for his subsistence. By this method the burden of repayment of the expenditure on improvement on the allottee would be considerably reduced, and the sense of ultimately owning the land would create in him an incentive to reclaim it with the minimum expenditure possible.

52. As stated in the previous Section, the cost of reclamation of *usar* land is estimated at Rs. 325 per acre, including Rs. 150 for irrigation. As this expenditure cannot be met from the profits of cultivation in early years, we recommend that 75 per cent of the cost of reclamation should be recovered in convenient instalments spread over a period of 15 years, the first instalment commencing from the fourth year after allotment. The balance of expenditure should be treated as subsidy to be shared equally by the Centre and the State Government. We have purposely suggested a long period for the recovery of the loan charges (with a moratorium for the first three years) as the outlay on reclamation is large and there will hardly be any appreciable returns on investment at least in the first two

years. On the other hand, it will be necessary to give suitable financial assistance to the allottees in the form of loans for the purchase of implements, bullocks, etc., which may be recovered from the third year of the grant of the loans in five annual instalments at a concessional rate of interest.

53. As estimated by the Agricultural Chemist to Government, U.P., there are over six lakh acres of *usar* land available in large-sized blocks in the State, which are not only easier to reclaim [class (d) of para 35], but the improvement of which is also economically feasible. The total cost of reclamation of these six lakh acres of *usar* will run to over Rs. 20 crores at the rate of Rs. 325 per acre. As this is a very large outlay for which the State Government may find it difficult to provide, we suggest that at least 50,000 acres of the easily reclaimable type of *usar* should be taken up for improvement during the Third Five Year Plan period. A sum of Rs. 1.625 crores will be required for this purpose.

54. As most of *usar* lands belong to Government, we suggest that Government may dispose of these lands at a *nominal* price to individuals or co-operative societies, with the specific object of reclaiming them and bringing them under cultivation. Alternatively, these lands may be leased out on a long-term basis. The maximum limits of cultivation should be liberalised in the case of individuals in order to attract them to make investments in the improvements of *usar* lands. Government may further give them financial assistance in the form of loans at a low rate of interest, for the purchase of farm machinery such as tractors, rippers, etc., and for the installation of tube-wells. We have been greatly impressed by the excellent results achieved by enterprising individuals and the State Agriculture Department in reclaiming certain types of *usar*, and have come to the conclusion that, if large areas of *usar* are to be turned into tractable land, a bold policy of financial assistance to enterprising individuals and co-operative societies should be adopted. Government may also consider the question of setting up a committee or board, which should have the power to sanction proposals for improvement or reclamation of *usar*, and to make advances for this work. The committee or board should ensure that the methods adopted for reclamation are those which have been approved by the technical officers of the State Agriculture Department.

55. *Category II.*—The blocks in this category offered for reclamation are situated in the districts of Allahabad, Banda, Bijnor, Jalaun and Pilibhit. Most of the wastelands in Jalaun (blocks 30—33) consist of ravines, and their reclamation will involve large financial outlay. We do not propose to deal with them in this report. As regards the wastelands in the districts of Allahabad, Banda and Bijnor, the total area is small, and we suggest that these lands may be allotted, after reclamation, to landless labourers and the members of the Scheduled Castes and the Scheduled Tribes, in accordance with the existing instructions of the Revenue Department. Twenty-five per cent of the expenditure on reclamation should be treated as subsidy to the cultivators, and the remaining as loan to be recovered in easy instalments spread over a period of 10—15 years. In the Pilibhit district, however, wastelands are being reclaimed by the State Government for establishing colonies of cultivators. Considerable progress has been made in the settlement work. We suggest that this work should be continued, and that preference should be given to landless labourers and the members of the Scheduled Castes and the Scheduled

Tribes for settlement on reclaimed lands on a co-operative basis. A model settlement scheme is given in Appendix H.

Suggestions for effective utilisation of wastelands

56. We may now make a few suggestions for the effective utilisation of wastelands located in the State,

57. A detailed soil survey for land-use should be carried out in each area proposed for reclamation, so that the lands are put to proper use. Soil surveys of *usar* land have been conducted by the State Department of Agriculture in five districts of the State, and it is suggested that these surveys should be extended to other areas where *usar* lands in large-sized blocks are likely to be available for reclamation. The State Government may apply for financial assistance to the Central Soil Conservation Board for carrying out these surveys.

58. After reclamation measures have been carried out, the responsibility for the follow-on cultivation operations should be that of the normal staff of the Agriculture Department. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

59. In view of the large-scale *usar* reclamation work proposed by us, we have recommended the setting up of a committee or board, which should be responsible for the following :—

(a) Location of areas of mild *usar* where the permanent water-table is beyond 10 ft. from the surface, and which have good permeability and no hard pan [*vide* para 35(d)],

(b) preparation of *usar* reclamation schemes,

(c) power to sanction proposals for improvement of *usar* land, and to make advances for this purpose in accordance with the schedule approved by Government,

(d) advising cultivators or co-operative societies regarding suitable methods to be adopted for reclamation,

(e) to augment facilities for irrigation in the reclaimed areas, and to arrange for loans for the purchase of pumping sets, and for construction of wells and tube-wells,

(f) to ensure proper follow-on cultivation operations in the reclaimed lands with a view to improving their productivity, and

(g) to help in the allotment of *usar* lands to individuals and co-operative societies.

60. Pilot projects should be set up in the districts where mild *usar* is widely prevalent, so as to demonstrate to the cultivators practical methods of reclaiming *usar* land. Some pilot projects have been started in the districts of Aligarh, Mainpuri, Etawah, Kanpur, Unnao, Hardoi, Sultanpur, Pratapgarh, Azamgarh and Ghazipur. We suggest that such projects may be extended to other districts.

61. Before allotments are made to landless labourers and the members of the Scheduled Castes and the Scheduled Tribes, *usar* lands should be

reclaimed and the cost of reclamation apportioned between the Government and the allottees, in the manner indicated in para 52.

62. There are practically no irrigation facilities in the *Tarai* tract of the State. The construction of shallow wells may be encouraged by the grant of subsidy and loans to the cultivators on a liberal scale.

63. The lands in the *Tarai* tract are fertile, but they are infested with pernicious weeds and grasses which are difficult to eradicate unless facilities for mechanical cultivation are made available to the cultivators. Ordinarily, it would not be within the reach of the cultivator to own a tractor, and we would, therefore, recommend that Government should encourage the setting up of tractor stations to be managed by co-operative societies or by private tractor companies.

64. We had an opportunity of visiting a settlement project undertaken by the State Government at Sampurnanagar, in the Kheri district. We were impressed by the progress made under the project and the interest which the officers of the Revenue and Colonisation Departments were taking in its execution. In view of the satisfactory progress made so far, we suggest that larger allocations should be made for settlement work so that the entire area that may be available for reclamation in the Pilibhit district, is brought under cultivation.

65. In any settlement project the selection of settlers is the most important factor contributing to its success. Accordingly, special attention should be given to this aspect of settlement work so that the right type of settlers who have an aptitude for farming and who are willing to do hard work are selected.

66. For any settlement work to be successful, it is necessary that the revenue/block agency should be associated with it so that the problems of the settlers are attended to as expeditiously as possible. We have found that wherever the District Collectors and the Block Development Officers have taken personal interest in settlement work, the projects have been successful.

67. The general crop patterns of the lands in the two categories are as under :—

67.1. *Category I.*—In the initial stages of reclamation of *usar,* paddy is the only crop suitable for cultivation in these lands, and may be followed by berseem. Generally a good paddy crop may be expected in the fourth or fifth year after the reclamation work is undertaken. Paddy may be immediately followed by gram or peas, and for clay soils, paddy gram or paddy-peas is the normal rotation. If the soils are light, *dhaincha* (*Sesbania egyptica*) may be grown as a green manure crop in the rainy season, followed by wheat in the *rabi* season. When a wheat crop can be successfully grown in an *usar* land, it is taken to have been reclaimed. However, if a wheat crop is not satisfactory, salt-resistant crops like barley, oats, paddy or mustard are grown for some more years until the land is able to produce a good crop of wheat. Wherever irrigation is available, garden land cultivation can be practised in reclaimed *usar*. A variety of garden crops such as citrus, mango, guava, etc., may be grown. Sugarcane can also be cultivated in such reclaimed lands.

67.2. *Category II.*—As stated earlier, a small area of 2,543 acres has been offered for reclamation in this category in the districts of Allahabad, Banda and Bijnor. Most of the wastelands in the Allahabad district are dry lands, which, after reclamation, can grow crops like jowar, bajra, kondon, linseed etc. In the Banda and Bijnor districts which receive sufficient rainfall, paddy, wheat, gram and pulses are the main crops. The tract in the Pilibhit district is cris-crossed by numerous rivuletsc which swell to enormous dimensions in the rainy season. The water-table of the land is very high. Like the riverain tracts of the Punjab, the lands in the Pilibhit district can grow excellent crops of sugarcane, and in recent years there has been considerable extension of sugarcane cultivation in this tract. The other crops grown in the district are paddy, wheat, barley, maize, masur, chillies and turmeric.

Economic aspects of reclamation

68. We shall now examine the economic aspects of reclamation of wastelands included in categories I and II. The main factors influencing the economics of reclamation are the cost of reclaiming wastelands and the anticipated benefits on account of reclamation in terms of additional agricultural production.

69. Investigations on the reclamation of *usar* (category I) have been carried out over a period of years on Government farms in Uttar Pradesh. The results of these field experiments have shown that in the fourth year after *usar* reclamation is started, the yield of paddy in reclaimed lands is about 12 maunds per acre. In the first three years, the estimated yields are 5, 7½ and 10 maunds respectively. When the salinity is brought down to a very low level, irrigated wheat can be grown with an average yield of 15 maunds per acre. The cultivation of fruit crops gives still higher returns. For our present purpose, we may assume a yield of 12 maunds of foodgrains per acre as a result of land improvement measures.

70. As regards the wastelands in category II, 5,824 acres in the Jalaun district (blocks 30—33) out of 11,842 acres offered for reclamation, may be left out of calculation as these are highly eroded and have developed deep gullies. The cost of reclaiming these gullied lands will be heavy, and the returns will not be commensurate with the expenditure involved. The wastelands in the districts of Allahabad, Banda and Bijnor can grow seasonal crops only as no irrigation is available. The average additional production from these lands may be estimated at 5 maunds per acre.

70.1. The wastelands in the Pilibhit district are fertile, and with the provision of adequate irrigation, double cropping can be practised. Further, these lands are fit for raising commercial crops like sugarcane, which is highly remunerative. On a conservative estimate, we may assume an average additional production of 10 maunds of foodgrains per acre. The utilisation of these wastelands, however, involves the establishment of settlement colonies since it is ordinarily not possible for cultivators to reclaim the lands without financial assistance from Government. In determining the economic aspects of a reclamation project, the cost of settlement which is usually heavy, should be taken into account. But, we consider that the settlement of landless labourers and the members of the Scheduled Castes and the Scheduled Tribes is a social problem, and the expenditure on this account should accordingly be treated separately from the actual cost of reclamation.

71. To assess the economic aspects of reclamation between the two categories of reclaimable lands, the figures of estimated additional food production should be studied in relation to the costs of reclamation and other relevant factors. Table I gives the area proposed for reclamation in each category, the cost of reclamation, the additional food production, and the cost of reclamation per maund of additional food production.

72. It will be seen from the table that the cost of reclaiming 61,018 acres of land in categories I and II comes to about Rs. 1.73 crores, *i.e.*, about Rs. 284 per acre. The estimated additional production from the reclaimed lands is 6,97,465 maunds (24,901 tons), valued at Rs. 83.70 lakhs. Thus the value of production will cover the cost of reclamation in about two crop seasons.

73. As regards the economics of reclamation of wastelands in the two categories, the areas offered in the districts of Allahabad, Banda and Bijnor, although costing less than other wastelands for reclamation, are dry lands and accordingly not very productive. The total area of these dry lands is also small. The lands in the Pilibhit district, however, are quite productive. They have ample underground water supply, and are also suited for sugarcane cultivation. The *usar* lands in category I, particularly those which are easier to reclaim at an economic cost [*vide* class (d) of para 35] offer the greatest promise for increasing agricultural production because of the availability of large tracts of such *usar* in the State, which, after reclamation, can be used for the rehabilitation of the poorer sections of the rural community, like the landless labourers and the members of the Scheduled Castes and the Scheduled Tribes, and other backward classes. In spite of these advantages, we have recommended that only 50,000 acres of mild *usar* may be taken up for reclamation or improvement during the Third Plan period, because the financial outlay on works of reclamation is large, and it may take the State Department of Agriculture some time to set up an effective organisation for demarcating tracts of mild *usar* and undertaking reclamation operations in these tracts. In terms of additional production per acre, these mild *usar* lands seem to be the most promising.

Priorities between different categories of reclaimable lands.

74. We may now preceed with the question of assigning priorities between the different categories of reclaimable lands. The answer to this question will be found in what has already been stated in this section.

75. We recommend that the wastelands in category I may be assigned the highest priority. Amongst the various types of *usar*, the work of improvement or reclamation should be confined to those areas where less intractable type of usar as defined in (d) of para 35, is found in large-sized, compact blocks, and there are adequate underground water resources. Already such blocks of *usar* have been located in the districts of Kanpur, Fatehpur, Aligarh, Mainpuri and Unnao, and efforts should be made to locate similar areas in other districts by conducting soil surveys.

76. The wastelands in the *Tarai* tract of the Pilibhit district included in category II are quite productive and should be assigned an equally high priority. These lands can produce good crops under favourable conditions, and are suited for the cultivation of sugarcane. The last in the order of priority are the dry lands in the districts of Allahabad, Banda and Bijnor.

TABLE I

Cost of reclamation of land in different categories and estimated additional production

Category	Description	Block No.	Area proposed for reclamation (acres)	Average cost of reclamation per acre (Rs.)	Total cost of reclamation per acre (Rs. lakhs)	Additional production per acre (maunds)	Total additional production (maunds)	Total value of additional production per acre (Rs.)	Value of additional production per acre (Rs.)	Average cost of reclamation per maund of additional production (Rs.)
I	*Usar*	—	50,000	325*	162·50	12	6,00,000	72,00,000	144	27·1
II	Land infested with thick growth of jungle, shrubs and bushes	27-29	2,543	70	1·78	5	12,715	1,52,580	60	14·0
		34-38	8,475	110	9·32	10	84,750	10,17,000	120	11·0
	TOTAL		61,018		173·60		6,97,465	83,69,580		

*Where *Usar* has a hard sub-surface pan, an additional expenditure of Rs. 80 per acre will be incurred for ripping the pan.

NOTE.— (*a*) The main food crops of the lands included in category I are paddy in the first three or four years, and wheat, gram, field pea, etc., thereafter. A variety of garden crops can also be grown.

(*b*) The main food crops of the lands included in category II (blocks 27-29) are jowar, bajra, paddy, wheat, gram, pulses, etc.

(*c*) The main food crops of the lands included in category II (blocks 34-38) are paddy, wheat, barley, maize, chillies, turmeric, sugarcane, etc.

(*d*) A common price of Rs. 12 per maund of food crop is assumed.

SUMMARY OF GENERAL CONCLUSIONS AND RECOMMENDATIONS

1. Of the total area of 10.20 million acres under the heads "other uncultivated land excluding fallows" and "fallows other than current fallows", only 30,460 acres have been located for reclamation in the State in compact blocks of 250 acres or more. (This is the figure as reported by the Revenue authorities, but the soil surveys carried out by the State Agriculture Deparment in a few districts have revealed the existence of over 2.8 lakh acres of *usar* lands in blocks of 200 acres or more, thus indicating the possibility of larger areas being available for reclamation). This are is relatively small, considering that the actual extent of arable wastelands available in the State is much larger than the figures reported in the revenue records, although the bulk of these wastelands is found in blocks smaller than 250 acres in size.

(*Paragraph* 24)

2. The wastelands found in the State may be classified into the following two categories :—

I—*Usar* lands, and

II—lands infested with thick growth of jungle, bushes and shrubs.

(*Paragraph* 25)

3. The distribution of wastelands in categories I and II is as under :—

Category	Area acres
I	13,618
II	16,842

(*Paragraph* 26)

4. The area of *usar* lands offered for reclamation is small, but the surveys carried out by the State Agriculture Department have revealed the existence of extensive belts of degraded lands in the districts of Kanpur, Fatehpur, Aligarh, Mainpuri and Unnao. Although no surveys have yet been carried out in other districts, salinity and alkalinity are reported to be widely prevalent in the soils of Hardoi, Etawah, Rae-Bareilly, Pratapgarh, Mathura, Agra and Azamgarh districts.

(*Paragraph* 31)

5. There are cretain types of *usar* which can be reclaimed more economically than others, and it is necessary to classify *usar* lands so as to suggest appropriate remedies for their reclamation. Broadly speaking, usar lands may be divided into the following four classes for reclamation :—

(a) Land of which the permanent water-table is within 6 ft. from the surface, or which is impermeable due to the formation of *kankar* or the existence of an indurated clay pan, or where both these conditions exist,

(b) land where the permanent water-table lies between 6 and 10 feet from the surface, or which is semi-permeable due to the nascent formation of a pan, or where both these conditions exist,

(c) land in which the permanent water-table is beyond 10 ft. from the surface with no hard clay pan, but the clay fraction is in a deflocculated condition so that infiltration is impeded partially or completely, and

(d) land of which the permanent water-table is beyond 10 ft. from the surface, with no hard pan and good permeability.

(*Paragraph* 35)

6. Much of the intractable *usar* land in Uttar Pradesh belongs to class (a) above. Under suitable management over a period of years, this type of land can at best be made to grow grass or such salt-resistant trees as *babul* (*Acacia arabica*) or *ber* (*Zizyphus jijuba*). Lands in class (b) can be rendered fit for cultivation but the expenditure of time and effort is disproportionately high. The use of soil amendments such as gypsum, press-mud, etc., combined with the application of irrigation water to leach out harmful salts can be useful in reclaiming lands in class (c), but these amendments are generally too expensive. The soils in class (d) can, however, be readily reclaimed for agricultural purposes by the application of undecomposed bulky organic matter, together with the use of liberal quantities of irrigation water to leach out salts. This class of *usar* land offers the greatest scope for increasing agricultural production, since, on a rough estimate, over 50 per cent of *usar* land in the State belongs to this class.

(*Paragraph* 36)

7. The methods of reclamation of *usar* lands have been investigated by the State Agriculture Department, the National Botanic Gardens, Lucknow, and by individual farmers. A good deal of useful knowledge about the practical methods of reclamation of *usar* has been accumulated over the past years, and there is great need for the full use of the existing knowledge. The details about the practical methods of reclaiming *usar* are given.

(*Paragraphs* 37 *to* 40)

8. Practically no information is available on the cost of reclamation of *usar* land of different types. The cost of reclamation of lands which have a low water-table and which are not impervious to water is, however, estimated at Rs. 325 per acre. If the soil has a hard clay pan, a mechanical ripper will be needed to break the pan and an additional expenditure of Rs. 80 per acre will be necessary in such areas.

(*Paragraph* 41)

9. The blocks included in category II are situated in the districts of Allahabad, Banda, Bijnore, Jalaun and Pilibhit. Most of the wastelands in the Jalaun district consist of ravines, and their reclamation will involve

large financial outlay. The areas offered in the districts of Allahε Banda and Bijnore are dry lands and accordingly are not very produc The lands in the Pilibhit district are quite productive, as they have a underground water supply and are also suited for the cultivation of c mercial crops like sugarcane.

(*Paragraphs* 42 *to*

10. For the utilisation of *usar* lands which are easier to reclaim, State Government should set up a separate organisation, and allot t lands to landless labourers, etc., after reclamation, since the work reclamation involves a large outlay of money and the return on investı in early years is not sufficient to sustain a cultivating family wit financial assistance from the Government. During the first two years allottee should be paid on the basis of a means test which would take account the wages for the work done by him against the amount requ for his subsistence.

(*Paragraphs* 50 *and*

11. Of the total cost of reclamation of *usar* lands, 75 per cent should be recovered in convenient instalments commencing from fourth year after allotment. The balance of the expenditure shoulc treated as subsidy and shared equally by the Centre and the State Gov ment. It will also be necessary to give suitable financial assistance tc allottees in the form of loans for the purchase of implements, bullc etc., which may be recovered from the third year of the grant of the l in five annual instalments at a concessional rate of interest.

(*Paragraph*

12. Out of 6 lakh acres of *usar* lands available in large-sized bl which are easy to reclaim, at least 50,000 acres of the easily reclaim type of *usar* should be taken up for improvement during the Third Year Plan period. A sum of Rs. 1.625 crores will be required for purpose.

(*Paragraph*

13. Since most of the *usar* lands belong to Government, they ma disposed of at a nominal price to individuals or co-operative societies the specific object of reclaiming them and bringing them under cultiva Alternatively, these lands may be leased out on a long-term basis. Gov ment may give to cultivators financial assistance in the form of loans low rate of interest, for the purchase of farm machinery such as trac rippers, etc., and for the installation of tubewells.

(*Paragraph*

14. The extent of wastelands in the districts of Allahabad, Banda Bijnore is small, and these lands may be allotted, after reclamation landless labourers and the members of the Scheduled Castes and Scheduled Tribes, in accordance with the existing instructions of Revenue Department. Twenty-five per cent of the expenditure on reclε tion should be treated as subsidy to the cultivators, and the balanc loan to be recovered in easy instalments spread over a period of 10- years. In the Pilibhit district, however, the utilisation of wastelands involve the establishment of settlement colonies for arranging cultivation.

(*Paragraph*

15. A detailed soil survey for land-use should be carried out in each area proposed for reclamation so that the lands are put to proper use. Soil surveys of *usar* land have been conducted by the State Department of Agriculture in five districts of the State. It is suggested that these surveys should be extended to other areas where *usar* lands in large-sized blocks are likely to be available for reclamation. The State Government may apply for financial assistance to the Central Soil Conservation Board for carrying out these surveys.

(*Paragraph* 57)

16. After reclamation measures have been carried out, the responsibility for the follow-on cultivation operations should be that of the normal staff of the Agriculture Department. The agricultural staff should suggest suitable cropping patterns and also introduce improved agricultural practices in the reclaimed areas. The extension staff of the Community Development Organisation can assist, particularly in the demonstration of improved methods of cultivation and in arranging for the supply of agricultural requisites.

(*Paragraph* 58)

17. In view of the large-scale *usar* reclamation work to be undertaken in the State, the work of land reclamation may be entrusted to a Committee or Board which should be responsible for preparing *usar* reclamation projects, should have the power to sanction funds for their execution, should advise cultivators or co-operative societies regarding suitable methods to be adopted for reclamation, and finally should ensure proper follow-on cultivation operations in the reclaimed lands.

(*Paragraph* 59)

18. Pilot projects should be set up in the districts where mild *usar* is widely prevalent, so as to demonstrate to the cultivators practical methods of reclaiming *usar* lands. Some pilot projects have been started in the districts of Aligarh, Mainpuri, Etawah, Kanpur, Unnao, Hardoi, Sultanpur, Pratapgarh, Azamgarh and Ghazipur. We suggest that such projects may be extended to other districts.

(*Paragraph* 60)

19. Before allotments are made to landless labourers and the members of the Scheduled Castes and the Scheduled Tribes, *usar* lands should be reclaimed and the cost of reclamation charged to the allottees, in the manner indicated in para 51 of Section C.

(*Paragraph* 61)

20. There are practically no irrigation facilities in the *Tarai* tract of the State. The construction of shallow wells may be encouraged in this tract by the grant of subsidy and loans to the cultivators on a liberal scale.

(*Paragraph* 62)

21. The lands in the *Tarai* tract are fertile but they are infested with pernicious weeds and grasses which are difficult to eradicate unless facilities for mechanical cultivation are made available to the cultivators. Ordinarily, it would not be within the reach of the cultivator to own a tractor,

and we would, therefore, recommend that Government should encourage the setting up of tractor stations to be managed by co-operative societies or by private tractor companies.

(*Paragraph* 63)

22. In view of the satisfactory progress made so far in the settlement projects undertaken by the State Government, larger allocations should be made for settlement work so that the entire area that may be available for reclamation in the Pilibhit district, is brought under cultivation.

(*Paragraph* 64)

23. In any settlement project the selection of settlers is the most important factor contributing to its success. Accordingly, special attention should be given to this aspect of settlement work so that the right type of settlers who have an aptitude for farming and who are willing to do hard work are selected.

(*Paragraph* 65)

24. For any settlement work to be successful, it is necessary that the Revenue/Block agency should be associated with it so that the problem of settlers are attended to as expeditiously as possible.

(*Paragraph* 66)

25. Field experiments on the reclamation of *usar* lands have shown that in the fourth year after reclamation, the yield of paddy is about 12 maunds per acre. When the salinity is brought down to a low level, irrigated wheat can be grown with an average yield of 15 maunds per acre.

(*Paragraph* 69)

26. The wastelands in the districts of Allahabad, Banda and Bijnore can grow seasonal crops only as no irrigation is available. The average additional production from these lands is estimated at 5 maunds per acre. The wastelands in the Pilibhit district are fertile and, with the provision of adequate irrigation, double cropping can be practised. An average additional production of 10 maunds per acre can be estimated from these lands.

(*Paragraph* 70)

27. The cost of reclaiming 61,018 acres of land in categories I and II comes to about Rs. 1.73 crores, *i.e.* about Rs. 284 per acre. The estimated additional production from the reclaimed lands is 24,901 tons, valued at Rs. 83.70 lakhs. Thus the value of production will cover the cost of reclamation in about two crop seasons.

(*Paragraph* 72)

28. The wastelands in category I may be assigned the highest priority. Amongst the various types of *usar,* the work of improvement and reclamation should be confined to those areas where less intractable type of *usar* as defined in (d) of para 35, is found in large-sized, compact blocks, and there are adequate underground water resources.

(*Paragraph* 75)

29. The wastelands in the *Tarai* tract of the Pilibhit district included in category II should be assigned an equally high priority. The last in the order of priority are the dry lands in the districts of Allahabad, Banda and Bijnore.

(*Paragraph* 76)

Sd/-
(B. N. Uppal)
Chairman

Members
Sd/-
(J. P. Mital)

Sd/-
(F. C. Gera)

Sd/-
(R. V. Tamhane)

Sd/-
(Satish Chandra)
Development Commissioner

Sd/-
(Dashrath Singh)
Revenue Secretary

Sd/-
(S. K. Bhatnagar)
Deputy Secretary (Agriculture)

Sd/-
(Sumer Singh)
Superintending Engineer
(Irrigation)

Sd/-
(A. S. Venu Gopalan)
Secretary

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APPENDICES

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APPENDIX A

K. R. DAMLE, I.C.S.,
Secretary.

No. F. 1024/*SPL*/59

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE
(*Department of Agriculture*)

New Delhi, June 11, 1959.

My Dear

You will agree that the importance of reclamation of culturable waste lands for the purpose of increased agricultural production cannot be overemphasised. The extent of culturable waste lands in the country has been variously estimated and the figures run into millions of acres. These waste lands are of two categories :

(a) lands which are really adjuncts of village *abadis* and are meant to serve as pastures and fuel forests or sites for the extension of the *abadis;* and

(b) large blocks of land which have either gone out of cultivation or have never been brought under cultivation.

It is the latter category which affords the greatest promise for increased agricultural production. The site of large areas of uncultivated land has yet to be determined. Government, therefore, have decided to appoint a Committee of experts which will work in collaboration with experts in the States in regard to which the Committee will make the investigations.

2. The following will be the terms of reference of the Committee :

(1) to make a survey of land classified as "other uncultivated land excluding fallow lands" and "fallow lands other than current fallows" and locate areas where large blocks of land are available for reclamation and resettlement;

(2) to suggest suitable measures for reclamation according to conditions in different areas and estimate the cost of reclamation and colonization and the financial assistance and agricultural extension and training necessary for the settlers (the settlements being made on a co-operative basis);

(3) to suggest the terms and conditions upon which settlement should be made, the areas to be allotted and the payments to be made by settlers' co-operatives; and

(4) to estimate the economic aspects of such reclamation in terms of the expenditure involved, the likely addition to food production and the employment and income that would become available to settlers and their families and to lay down the priorities *inter se* between different categories of reclaimable lands.

3. The Committee will consist of the following :

1. Dr. B. N. Uppal, Agricultural Commissioner, Government of India	Chairman
2. *Dr. J. K. Basu, Senior Director of Soil Conservation, Government of India	Member
3. Shri F. C. Gera, Chairman, Central Tractor Organisation	Member
4. Shri J. P. Mital, Irrigation Adviser, Ministry of Community Development and Co-operation	Member

In addition, the Committee will co-opt in individual States the following officers :

1. The Development Commissioner;
2. The Revenue Secretary;
3. The Secretary of the Agriculture/Forest Department, or his nominee; and
4. A representative of the Irrigation Department.

4. During the course of the next two or three months, the Committee will take up preliminary work for collection of data with the help of the State Governments and will then visit individual States from the beginning of September, 1959. The intention is that the Committee should complete its work and submit its proposals in respect of one State in about a month and then proceed to take up the investigation in another State. In order to ensure effective coordination and speedy completion of the work, it is suggested that each State Government/Union Territory may kindly appoint a fairly Senior officer who would be able to devote sufficient time to the work of the Committee, help it in collecting the necessary information and carry on correspondence with it. The name and designation of the officer may kindly be communicated to Dr. B. N. Uppal, Chairman of the Committee.

5. In view of the urgent need for bringing wastelands, wherever available, under cultivation and thus increasing agricultural production, it is hoped that the State Governments would kindly extend their full cooperation and provide the necessary facilities for the work of this Committee.

Yours sincerely,
(Sd.) K. R. DAMLE

Chief Secretaries,
All States and Union Territories.

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*On retirement of Dr. J. K. Basu, Shri M. S. V. Rama Rao, Senior Director of Soil Conservation, Govt. of India, was appointed a Member from the 3rd Feb., 1960 *vide* Memo. No. 12-1/59-GMF(Co.), dated the 3rd February, 1960 (copy enclosed).

No. F. 12-1/59-*GMF(Co.)*

GOVERNMENT OF INDIA

MINISTRY OF FOOD AND AGRICULTURE

(Department of Agriculture)

New Delhi the 3rd February, 1960

SUBJECT :—Reclamation of culturable wastelands in the country—
Setting up of a Committee.

Reference this Ministry's Express letter of even number, dated the 17th June, 1959, on the subject mentioned above. The following amendment may please be made in regard to the Membership of the Committee as mentioned in D.O. No. F. 1024/SPL/59, dated the 11th June, 1959, referred to therein :

"Shri M. S. V. Rama Rao,
Senior Director of Soil Conservation,
Government of India,
in place of Dr. J. K. Basu since retired."

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(Sd.) V. BALASUBRAMANIAN
Under Secretary

APPENDIX B

Questionaire issued by the Wastelands Survey and Reclamation Committee

1. What is the total area of culturable wasteland in your State? (Culturable waste land is defined as under :

   All lands available for cultivation, whether not taken up for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles and which are not put to any use. They may be assessed or unassessed or may be in isolated blocks or within cultivated holdings. Land once cultivated but not cultivated for five years in succession is included in this category).

2. What is the area under permanent pastures and other grazing lands?

3. What is the extent of land under miscellaneous trees and groves?

4. What is the extent of fallow lands other than current fallows? (Current fallows are defined as those lands which remain fallow for the current year only.

   Lands other than current fallows are defined as lands which are fallow for more than one year but less than five years).

5. Out of the areas at questions 1, 2, 3 and 4 above, is it possible to demarcate blocks of 1,000 acres or more for purposes of colonization and resettlement? If so, how many such blocks?

6. How many blocks could be carved out if the size of the block is reduced from 1,000 acres and more to 500 acres and more? So far as blocks of 1,000 acres or more are concerned, please give details of each block in the form at Appendix 'A' attached.

7. Have any colonization and resettlement operations been carried out in your State during the last 10 years? If so, please give details of areas colonized and resettled, the number of persons resettled, the location of the colonized areas, terms of allotment, and whether the colonization has been successful. The extent of financial assistance given to settlers may also be indicated.

8. Any other remarks that the State Government may like to make in the light of the terms of reference of the Committee.

APPENDIX 'A' VIDE ITEM 6 OF THE QUESTIONNAIRE

STATE :
DISTRICT :

Details in respect of Block No. ——————— *consisting* 1,000 *acres or more*

(Where blocks of 1,000 acres or more lie contiguously, a single form can be used for the entire area; otherwise separate forms should be used for each block of land.)

1. Where is the block located? (Here mention the nearest village or town and the Revenue Tehsil in which the block is located.)
2. Is the area included in any Community Development Block? If so, please give the name of the Block.
3. What is the nearest Railway Station and the distance of the Station from the block?
4. What is the nearest Post Office and the distance of the Post Office from the block?
5. What is the nearest Telegraph Office and the distance of the Telegraph Office from the block?
6. Is the block connected by road with adjoining villages and towns?
7. If so, is the road fair-weather or all-weather?
8. What is the total area of the block? (If possible, please also supply a map of the block).
9. How much of the area belongs to Government or is with the Panchayats?
10. How much of the area is privately owned?
11. Is it necessary to acquire the whole or part of the land which is privately owned, in order to carry out the colonization operations in the block successfully?

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12. If so, what would be the likely cost of acquisition?
13. Is the area of the land suitable for cultivation as it is, or would it be necessary to do some reclamation work before it could be allotted?
14. If reclamation work is necessary, indicate whether the land is infested with jungle or with weeds or with shrubs and bushes.
15. Whether the land could be reclaimed with the use of manual labour or will it require reclamation by heavy tractors? If the former, is adequate labour locally available?
16. If there are no trees or weeds or shrubs and bushes on the land, is the land eroded? If eroded, please indicate the extent of erosion and the soil conservation measures necessary to make it fit for cultivation.
17. What would be the approximate cost of reclamation or soil conservation per acre of land in the block?
18. What is the type of soil in the block? (alluviums, black, red or lateritic.)
19. Is the land flat or gently sloping or steep? What is the depth of the soil?
20. What crops are grown in the area round about the block?
21. What is the yield per acre of each crop?
22. What is the nearest marketing centre for these crops?
23. What is the extent and distribution of rainfall in the area?
24. Can irrigation facilities be made available for the block? If so, what kind of facilities?
25. Whether these irrigation facilities will be perennial or non-perennial?

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26. If no irrigation facilities exist at present, whether any irrigation projects likely to be taken up in Third Five Year Plan will cover this land ?
27. What is the depth of sub-soil water ? Is water sweet or brackish ?
28. Are anti-malarial operations necessary in the area for successful colonization ?
29. Is any endemic disease prevalent in the area ? If so, do the State Government contemplates any measures to combat this disease ?
30. Is drinking water available in the block ?
31. Are there any drinking water wells in use ?
32. Is the area subject to depredations of wild animals ? If so, what animals ?
33. Is the block likely to attract settlers from distant places in the State or from other States ?
34. If the block is not likely to attract settlers from distant places in the State or from other States what kind of settlers would you recommend for colonization of the block ?
35. Do you think educated unemployed could be successfully settled in the block ?
36. What should be the unit of allotment per settler ?
37. Would you suggest that the settlers should put up their home-steads on allotted lands, or would you like to set up *abadis* for them ? If the latter, what should be the unit of allotment for residential purposes in the village *abadi* ?
38. Would it be necessary to organise any training for the settlers, before they are allotted land ? (the settlement will be on co-operative basis.)
39. Any other details which you may like to give in the light of the terms of reference.

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APPENDIX C

DR. B. N. UPPAL
Chairman, Wastelands Survey
& Reclamation Committee.

D.O. No. F./59-WLS & RC

GOVERNMENT OF INDIA
MINISTRY OF FOOD AND AGRICULTURE
(*Department of Agriculture*)
'Krishi Bhavan'
New Delhi

January 2, 1960
Paus 12, 1881

Dear Shri

Kindly refer to my letter of even number dated the 10th August 1959, with which a copy of the questionnaire issued by the Committee was forwarded to you.

2. According to the questionnaire, the State Government was required to demarcate blocks of 1,000 acres or more out of the total area under "culturable waste", "permanent pastures and other grazing lands", "miscellaneous trees and groves" and "fallows other than current fallows", and to give full details of the blocks so selected in Appendix 'A' attached to the questionnaire. The size of blocks was fixed at 1,000 acres or more as it was felt by the Committee that a sufficient number of blocks of this size would be available in all the States. The information now received from some of the States and our discussions with the Liaison Officers of the States of Madhya Pradesh, Bihar and Orissa have led us to think that the availability of culturable wasteland in blocks of 1,000 acres or more for purposes of reclamation and resettlement may be limited. We have, therefore, decided to collect information as in Appendix 'A' to the questionnaire issued with the Committee's letter referred to above, for all blocks measuring 250 acres or more.

3. While obtaining this information from the districts, it may be useful to get a certificate from the district officers that the areas other than those in blocks of 250 acres or more out of the total areas under the categories mentioned in para 2 above, are scattered in bits measuring less than 250 acres.

4. I am to request that urgent steps may kindly be taken to collect the required information in respect of blocks measuring 250 acres or more so that the requisite information is available to the Committee by the 31st January, 1960. In view of the fact that the Committee is required to complete its work within the next six months, it is requested that the information may kindly be obtained on a priority basis by deputing some officials to the different districts, if necessary. This should not, however, delay the

despatch of information in regard to blocks measuring 1,000 acres or more, which may have already been collected.

5. It appears that the term 'contiguous' used in Appendix 'A' to the questionnaire sent to the States alongwith our letter of even number dated the 10th August, 1959, requires elucidation. I may observe that even if a block is interspersed with a few cultivators' holdings or some natural obstructions, it should be considered more or less compact or 'contiguous' so long as the operations for the reclamation of land included in it can be undertaken on an economic basis.

Yours sincerely,
(Sd.) B. N. Uppal

All Liaison Officers
in the States and Union Territories.

सत्यमेव जयते

APPENDIX D

Statement showing yield (in lbs.) per acre of principal crops in Uttar Pradesh, 1957-58 (district-wise)

District/Crop	Paddy	Wheat	Jowar	Bajra	Barley	Maize	Gram	Moong	Sugar-cane	Cotton	Ground-nut	Til	Rape & Mustard
Dehra Dun	850	502	530	276	453	810	450	281	28,297	—	245	83	289
Saharanpur	776	635	530	276	453	683	443	294	30,006	158	245	230	289
Muzaffarnagar	787	649	530	276	453	810	429	58	20,755	115	245	240	289
Meerut	786	763	139	421	453	870	389	281	27,698	158	245	175	289
Bulandshahr	801	937	374	450	618	726	450	264	11,495	169	245	87	289
Aligarh	600	825	358	515	716	655	665	176	20,735	148	909	175	472
Mathura	629	620	252	391	733	792	657	206	20,697	144	909	333	313
Agra	615	866	350	590	574	792	625	264	15,313	230	909	282	439
Mainpuri	601	873	308	691	582	792	557	382	38,295	134	909	308	472
Etah	606	661	353	777	641	671	517	176	34,971	184	909	256	472
Bareilly	726	692	467	767	586	570	349	206	32,758	158	740	—	289
Bijnore	592	724	467	300	586	570	550	206	44,885	144	740	120	289
Budaun	628	513	467	536	376	570	517	294	37,717	202	522	240	289
Moradabad	439	826	467	245	545	570	517	294	37,717	173	353	148	289
Shahjahanpur	646	629	467	340	586	570	339	382	41,951	158	740	260	289
Pilibhit	668	485	467	300	586	570	349	281	44,099	158	740	160	289
Rampur	606	686	467	300	586	570	349	294	38,506	158	740	—	289
Farrukhabad	688	662	703	515	800	1,379	329	294	38,600	158	912	282	524
Etawah	683	805	717	643	1,028	814	666	323	20,547	158	483	205	440
Kanpur	778	793	660	515	796	814	854	206	22,331	202	483	210	435
Fatehpur	699	621	661	515	443	814	504	264	22,804	158	483	220	524
Allahabad..	463	621	420	317	712	814	495	235	19,670	173	483	140	524
Jhansi	210	731	535	287	503	725	582	323	15,831	158	343	144	318
Jalaun	221	619	350	287	503	725	624	323	16,437	114	343	115	318
Hamirpur	205	662	731	287	503	725	449	294	16,155	158	343	95	318
Banda	218	335	298	287	503	725	274	249	15,276	—	343	58	318
Varanasi	441	495	575	573	610	660	541	352	23,360	—	343	193	139
Mirzapur	385	495	575	573	420	660	397	88	20,693	—	343	70	139
Jaunpur	374	495	575	573	797	480	591	281	20,408	—	343	140	139
Ghazipur	210	495	575	573	681	660	591	352	20,029	—	343	137	139
Ballia	342	495	575	573	870	660	574	338	15,922	—	343	137	139
Gorakhpur	494	503	575	573	378	415	554	118	21,547	—	255	201	226
Deoria	382	607	575	573	596	415	554	293	21,705	—	255	131	226

APPENDIX D—*contd.*

District/Crop	Paddy	Wheat	Jowar	Bajra	Barley	Maize	Gram	Moong	Sugar-cane	Cotton	Ground-nut	Til	Rape & Mustard
Basti	444	663	575	573	413	415	554	145	20,848	—	255	123	226
Azamgarh	374	720	575	573	833	415	554	238	18,079	114	255	—	226
Naini Tal	604	445	466	427	537	763	503	382	23,415	124	672	149	278
Lucknow	474	734	487	416	754	606	536	281	18,229	158	716	146	385
Unnao	547	624	487	416	666	606	536	382	23,342	158	925	244	385
Rai Bareli	636	522	769	416	774	606	536	352	22,304	158	716	217	385
Sitapur	576	672	487	416	618	606	634	264	21,156	—	670	151	385
Hardoi	513	751	805	416	591	606	350	411	30,570	—	769	946	385
Kheri	541	518	487	416	551	522	361	281	23,162	—	716	165	385
Faizabad	632	724	661	631	907	376	390	264	20,709	—	415	—	202
Gonda	470	569	661	631	324	566	304	411	24,750	—	415	193	278
Bahraich	385	443	661	631	413	606	364	352	21,333	—	415	216	154
Sultanpur	571	716	661	631	923	376	634	293	22,441	—	415	190	202
Pratapgarh	522	716	661	631	672	376	311	118	14,971	—	415	146	202
Bara Banki	684	772	661	631	907	376	591	235	23,028	—	415	190	202
State	509	649	515	503	643	660	499	281	22,684	158	672	123	359

APPENDIX E

Land utilisation statistics for Uttar Pradesh during 1957-58 (*district-wise*)

District	Total geographical area		Forest	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
	By professional survey	By village papers		Barren and unculturable land	Land put to non-agricultural uses	Culturaable waste	Permanent pastures & other grazing lands	Misc. tree crops & groves			
Dehra Dun	768,646	713,107	472,301	6,400	38,786	8,568	1,031	37,888	27	8,663	139,443
Saharanpur	1,364,371	1,358,669	187,885	17,914	137,606	40,938	197	12,243	26,576	33,128	902,182
Muzaffarnagar	1,076,851	1,067,040	30,669	37,495	84,072	49,058	329	11,346	17,630	45,531	790,810
Meerut	1,486,298	1,484,300	24,373	50,121	112,526	71,919	15	9,412	9,563	47,677	1,158,694
Bulandshahr	1,207,987	1,248,196	27,342	72,379	32,761	74,282	398	19,125	1,301	43,021	937,587
Aligarh	1,242,496	1,260,329	12,022	103,014	70,678	37,251	947	12,452	294	45,975	977,696
Mathura	938,752	943,975	15,856	15,987	50,457	37,669	118	10,342	159	37,124	776,263
Agra	1,190,912	1,204,511	60,395	92,918	68,812	54,006	281	4,498	254	43,224	880,123
Mainpuri	1,075,136	1,134,241	122,048	1,65,522	58,015	47,677	91	13,740	237	55,639	671,272
Etah	1,097,792	1,102,096	7,294	35,309	66,744	131,134	661	29,965	2,225	58,467	770,297
Bareilly	1,018,554	1,012,588	4,862	18,198	85,086	29,593	233	16,925	32,655	28,459	796,567
Bijnore	1,194,541	1,233,823	131,042	27,205	103,664	46,391	926	80,266	53,808	38,476	752,047
Budaun	1,278,726	1,306,417	18,838	31,586	80,651	46,943	394	39,669	11,221	54,379	1,022,736
Moradabad	1,464,672	1,492,014	46,122	30,365	99,710	52,588	1,113	15,850	35,664	50,556	1,160,096
Shahjahanpur	1,127,976	1,145,766	36,463	24,435	76,247	50,079	1,195	34,137	16,841	67,507	838,862
Pilibhit	864,973	1,038,086	277,772	10,101	62,522	67,764	390	89,007	19,479	38,393	472,658
Rampur	572,998	601,108	26,711	12,625	51,179	29,706	197	4,682	8,843	32,359	434,806
Farrukhabad	1,052,960	1,113,476	59,424	72,878	91,037	94,077	66	35,436	1,933	56,625	702,000
Etawah	1,067,885	1,175,998	147,630	166,093	64,978	51,015	482	13,795	409	46,455	685,141
Kanpur	1,508,499	1,549,994	47,773	173,477	100,937	62,938	13,738	57,769	1,669	53,838	1,037,855
Fatehpur	1,039,917	1,067,502	18,092	86,440	104,398	80,258	38	29,504	244	64,083	684,444
Allahabad..	1,791,827	1,862,548	67,151	117,636	176,084	133,323	7,600	82,016	286	180,073	1,098,379
Jhansi	2,488,333	2,552,772	240,538	147,782	119,076	680,426	6,613	17,487	2	340,418	1,000,430
Jalaun	1,127,411	1,185,274	95,958	72,663	62,015	47,667	3,186	15,548	194	35,822	852,221
Hamirpur	1,776,378	1,835,937	128,587	91,305	95,893	227,468	346	9,630	552	188,028	1,094,128
Banda	1,888,224	2,006,819	179,184	150,323	85,848	253,367	422	87,904	11	250,498	999,262
Varansi	1,255,552	1,303,706	189,171	40,521	101,163	41,046	11	54,946	1,092	67,962	807,803

APPENDIX E—*contd.*

District	Total geographical area		Forest	Land not available for cultivation		Other uncultivated land excluding fallows			Current fallows	Fallows other than current fallows	Net area sown
	By professional survey	By village papers		Barren and unculturable land	Land put to non-agricultural uses	Culturable waste	Permanent pastures & other grazing lands	Misc. tree crops and groves			
Mirzapur	2,797,798	2,952,548	989,336	205,556	138,296	361,500	1,453	183,824	1,581	322,621	748,381
Jaunpur	994,701	995,410	297	42,512	74,018	62,387	721	33,520	3,607	64,260	714,088
Ghazipur	887,005	833,023	—	23,487	64,309	50,930	—	22,881	3,186	36,370	631,860
Ballia	756,685	795,994	52	44,702	82,668	22,632	—	32,087	3,005	35,840	575,008
Gorakhpur	1,560,659	1,603,140	154,085	7,786	121,282	39,254	482	62,946	2,828	46,569	1,167,908
Deoria	1,335,565	1,341,708	4,444	22,690	100,122	24,952	449	54,692	19,910	33,025	1,081,424
Basti	1,805,702	1,811,572	8,952	19,202	164,930	87,688	903	46,101	396	59,906	1,423,494
Azamgarh..	1,116,294	1,419,171	931	62,767	123,869	65,040	106	41,488	6,207	63,004	1,055,759
Naini Tal	1,686,133	1,514,606	942,899	5,669	46,402	69,402	12,345	21,854	6,492	57,859	351,684
Naini Tal (H.P.)	—	277,000	163,789	4,046	—	—	—	32,405	—	—	76,760
Almora	3,520,614	3,411,638	690,101	—	—	—	—	—	34,708	—	514,122
Garhwal	3,603,610	3,596,307	2,054,707	—	—	—	—	—	33,982	—	860,673
Tehri Garhwal	2,916,595	2,880,000	1,775,986	—	—	—	—	—	951	—	97,476
Lucknow	625,517	624,435	12,591	60,204	51,440	53,752	474	33,591	18	48,074	364,291
Unnao	1,135,302	1,173,132	42,190	110,512	100,184	103,718	1,041	60,472	417	71,874	682,724
Rae Bareli..	1,125,402	1,122,174	9,177	87,711	110,430	112,998	277	95,040	104	45,272	661,165
Sitapur	1,411,642	1,441,255	21,840	15,188	128,896	46,589	539	65,213	13,193	96,809	1,052,988
Hardoi	1,484,086	1,484,064	19,849	68,883	118,504	86,017	816	66,554	3,385	106,593	1,013,463
Kheri	1,902,141	2,025,447	427,626	15,290	164,107	130,448	1,339	118,857	29,920	131,746	1,006,114
Faizabad	1,094,426	1,083,677	5,272	28,106	124,587	59,434	2,184	72,422	1,394	56,892	733,386
Gonda	1,810,918	1,881,522	199,333	7,775	148,146	87,670	274	64,057	2,438	90,782	1,281,047
Bahraich	1,689,978	1,703,954	244,023	10,527	140,889	91,073	2,975	50,155	629	94,250	1,069,433
Sultanpur	1,092,446	1,103,204	4,695	81,497	100,357	64,454	1,418	87,530	196	54,017	709,040
Partapgarh	933,491	908,711	642	67,714	86,493	50,653	45	71,270	—	46,617	585,277
Barabanki	1,103,206	1,120,289	17,190	27,831	127,731	78,223	63	78,428	4,576	58,301	727,946
Total U.P.	72,609,536	63,939,327	5,780,925	2,886,292	4,638,605	4,295,965	68,922	2,208,564	346,751	3,633,071	40,080,232

APPENDIX F

Statement showing details of blocks in categories I & II offered for reclamation in Uttar Pradesh

District	Name of Block	Block No.	Nearest railway station	Accessible by all/fair weather road	Whether included in C.D. Block	Area (acres)	Extent of rain-fall (inches)	Depth and nature of sub-soil water		Endemic diseases
								Depth (ft.)	Nature	
				CATEGORY I						
Kanpur	Mau & Bilhoora	1	Pura	No road	No	420	30-35	40	N.A.	No
	Bilhaur	2	Pura	No road	No	251	30-35	40	N.A.	No
	Uttah	3	Bilhoor	No road	No	594	30-35	40	N.A.	No
	Naila	4	Bilhoor	No road	No	411	30-35	40	N.A.	No
	Narha Nangau	5	Bilhoor	No road	No	489	30-35	40	N.A.	No
	Rasulpur Risalabad	6	Bilhoor	No road	No	326	30-35	40	N.A.	No
	Balhipur	7	Chauhepur	No road	No	1,180	30-35	40	N.A.	No
	Taktauli	8	Pura	No road	No	300	30-35	40	N.A.	No
	Dalipnagar	9	Chauhepur	No road	No	356	30-35	40	N.A.	No
	Auram Paharpur	10	Bilhoor	No road	No	468	30-35	40	N.A.	No
	Birhum	11	Bilhoor	No road	No	648	30-35	40	N.A.	No
	Dalipur-Maharajpur	12	Pura	No road	No	273	30-35	40	N.A.	No
	Fatehpur	13	Pura	No road	No	411	30-35	40	N.A.	No
	Khera-Kursi	14	Pura	No road	No	476	30-35	40	N.A.	No
	Manawan	15	Bilhoor	No road	No	434	30-35	40	N.A.	No
Lucknow	Memaura	16	Amausi	No road	Yes	327	30-35	30	Sweet	No
	Khotola	17	Amausi	No road	Yes	538	30-35	30	Sweet	No
	Makhdoompur	18	Amausi	No road	Yes	342	30-35	27	Sweet	No
	Mati	19	Amausi	No road	Yes	1,392	30-35	30	Sweet	No
	Amausi	20	Amausi	No road	Yes	529	30-35	27	Sweet	No
	Barauli-Khalilabad	21	Utrathia	No road	Yes	1,515	30-35	30	Sweet	No
	Gahroo	22	Amausi	No road	Yes	382	30-35	25	Sweet	No
	Kurauni	23	Amausi	No road	Yes	429	30-35	27	Sweet	No
	Anawan	24	Haravani	No road	Yes	266	30-35	30	Sweet	No
	Jaiti-Khera	25	Mohan Lallganj	No road	Yes	398	30-35	27	Sweet	No
	Pipassand	26	Amausi	No road	Yes	463	30-35	25	Sweet	No

APPENDIX F—*contd.*

District	Name of Block	Block No.	Nearest railway station	Accessible by all/fair weather road	Whether included in C.D. Block	Area (acres)	Extent of rain-fall (inches)	Depth and nature of sub-soil water		Endemic diseases
								Depth (ft.)	Nature	
				CATEGORY II						
Allahabad	Dhari	27	Manda	No road	Yes	250	30	[illegible]	Sweet	No
Banda	Kalchiya	28	Bargard	All weather	Yes	265	36	90	Sweet	No
Bijnore	Bhogpur	29	Nagina	Fair weather	No	2,028	40-45	15	Sweet	No
Jalaun	Rampur	30	Orai	Fair weather	No	2,050	30-40	60-70	Sweet	No
	Gopalpur	31	Orai	Fair weather	No	1,686	30-40	60-70	Sweet	No
	Parendiwara	32	Orai	Fair weather	No	552	30-40	60-70	Sweet	No
	Leh-Mustagil	33	Orai	Fair weather	No	1,536	30-40	60-70	Sweet	No
Pilibhit	Ramnagar	34	Shakargarh	No road	Yes	1,008	40-50	20	Sweet	No
	Gunhan	35	Shakargarh	No road	Yes	1,174	40-50	20	Sweet	No
	Bamanpura	36	Palia Kalan	No road	Yes	5,358	40-50	20	Sweet	No
	Sungadi	37	Palia Kalan	No road	Yes	549	40-50	20	Sweet	No
	Binaura	38	Dudhia	No road	Yes	386	40-50	20	Sweet	No

APPENDIX G

Statement showing details of ownership of land offered for reclamation

District	Block No.	Area (acres)	Area belonging to		
			Government	Gaon Samaj	Private individuals
CATEGORY I					
Kanpur	1-15	7,037	7,037	..	—
Lucknow	16-26	6,581	6,581	..	—
CATEGORY II					
Allahabad	27	250	-	—	250
Banda	28	265	..	265	—
Bijnore	29	2,028	2,028	—	—
Jalaun	30-33	5,824	5,824	—	—
Pilibhit	34-38	8,475	5,844	2,631	—

APPENDIX H

Model Scheme for settlement of landless labourers particularly the Scheduled Castes and the Scheduled Tribes and unemployed agricultural graduates on a co-operative basis in Pilibhit district (U.P.)

An area comprising 8,475 acres of wastelands is available in the Pilibhit district, which can be utilized for settlement of landless labourers, particularly the members of the Scheduled Castes and the Scheduled Tribes, and unemployed agricultural graduates. The land is fairly fertile and has an assured and well-distributed rainfall of about 50 inches. The tract becomes completely inaccessible when the river Sarda is in high floods. The entire area is infested by tall "tarai" grasses interspersed with thick growth of khair (*Acacia catechu*) trees. The climate is unhealthy, malaria being rampant. The soil is sandy, sandy loam, silty loam and loam. The lands classified as sandy sand are not fit to be reclaimed. No irrigation is available in the area, but tube-wells can be installed for providing perennial irrigation. A variety of agricultural crops can be grown in the area, such as maize, wheat, rice, barley, turmeric and chillies, but sugarcane is the principal commercial crop of the tract. The area has thus great agricultural potentialities, and is suitable for colonization.

A model settlement scheme for the area is given below :

It is proposed to settle on these lands landless labourers, particularly the members of the Scheduled Castes and the Scheduled Tribes, and unemployed agricultural graduates, on a co-operative basis. It is not intended to present a rigid scheme since flexibility of details to suit local conditions is the *sine qua non* of the success of settlement schemes. The co-operative method of organisation can be applied in settlement work in the following manner :

(1) Land may be individually owned and operated, but all the services may be provided by a service co-operative of which the settlers are members, and

(2) Land may be owned individually, but jointly operated (*i.e.* co-operative joint farming).

In organising the societies, the viability and mutual knowledge and confidence which strengthen the co-operative character should receive due weight. The broad outlines of these patterns are indicated below.

Pattern I : *Individual farming with the help of a service co-operative*

Membership would be open to all the settlers to whom land has been granted in the area of operation of the society. It should be one of the conditions of allotment that the allottee shall be a member of the co-operative society and that he will follow the production programme and technical advice offered by the society. The co-operative caters to the needs of the members, particularly those relating to credit for agricultural production, and supplies of agricultural requisites like fertilisers, improved seeds, insecticides, etc., and of domestic requirements. The society will also arrange for the marketing of the agricultural produce of its members.

Allotment of land.—The unit of land to be allotted to each setler will be 10 acres, and in the case of agricultural graduates, it may be 20 acres

The allottees will have the right to alienate their lands only after they have paid back all the advances made to them by the Government. As the lands are not initially fit for cultivation and will entail expenditure on reclamation, the land revenue may be charged as follows :

1st year	No land revenue.
2nd year	1/3 of the assessed land revenue.
3rd year	2/3 of the assessed. land revenue.
4th year and onwards	Full land revenue.

It should be obligatory on the part of the allottee to cultivate the land himself or with the help of his family members.

Methods of working.—Each settler shall become a member of the society consisting of 50 settlers. He will receive from Government loan assistance for subscribing to the share capital of the society at the rate of Rs. 25 per member. This amount will be repayable to Government in a period of 5 years. The maintenance expenditure given to each family will be deposited with the society; the society will release the amount to the members concerned as and when needed. The society, if desired by the members, may also provide domestic requirements against their deposits.

One agricultural officer will supervise the work of a group of 5 societies. He will assist each society in drawing up a production plan, and all the agricultural operations should be carried out by the members in accordance with the programme. The society will supply fertilisers, improved seeds, etc., and, where necessary, heavy agricultural implements on hire. After the produce is harvested, the members will bring their produce to the society, which will arrange for its marketing through the marketing society or through normal marketing channels.

The affairs of the society will be managed by a Managing Committee elected annually by the members of the society. The society will have a manager to look after the maintenance of accounts, etc. The services of the specialist staff will be made available by the State Government.

Social amenities :

(i) *Homestead.*—About 1/6th of an acre of land may be allotted as a homestead plot. The value of the plot is estimated at Rs. 50.

(ii) *House building.*—A sum of Rs. 1,500 may be advanced to each family towards the cost of building a house.

(iii) *Provision of drinking water.*—One drinking water well and a hand-pump may be provided for 25 families. The cost of two wells with pumps will be Rs. 5,000, the average cost per family being Rs. 100.

(iv) *School.*—For a colony of 50 families, a school may be provided. The Education Department of the State will provide funds for this purpose.

(v) *Dispensary.*—Provision for a dispensary for each family will be made by the State Medical Department. A separate anti-malaria unit should also be provided.

Reclamation charges.—The average cost of reclaiming the land will be Rs. 110 per acre. Since the unit of allotment is 10 acres, the average cost will be Rs. 1,110 per family.

Follow-on cultivation charges.—A sum of Rs. 1,000 may be provided per family for purchasing a pair of bullocks, implements, etc.

Maintenance expenditure.—During the first few years when the returns from the reclaimed lands are not likely to be sufficient to cover the expenses of the settlers, it is necessary to advance to them some money for maintenance. The schedule of payment for each family may be worked out on the basis of a means test. Provision for maintenance charges of Rs. 600 may be made for a period of one year.

Administrative set-up.—A sum of Rs. 50 (one Manager on Rs. 100 p.m. *plus* D.A., and one-fifth the pay of Agricultural Officer on Rs. 200 p.m. *plus* D.A. Approximately, Rs. 2,500 for each colony) will be spent per family towards the administrative set-up.

To sum up, the details of expenditure per family on the various items will be as under :-

	Rs.
1 Value of land	3,000
2 Social amenities	1,650
3 Reclamation charges	1,110
4 Follow-on cultivation	1,000
5 Maintenance expenses	600
6 Administrative set-up	50
TOTAL	7,410

In the conditions obtaining in the Pilibhit district, provision for the following additional items will be necessary ·

(a) Communication,
(b) Irrigation, and
(c) Mechanical cultivation with tractors.

As far as communication is concerned, the expenditure on this account cannot be a right charge on colonization but should be treated as development expenditure. Irrigation should be provided by the installation of tube-wells to be operated by the State Irrigation Department. Only the charges of operating the tube-wells should be recovered from the settlers. As regards the provision for mechanical cultivation with tractors, loans may be advanced by the State Government to the co-operative societies for purchase of tractors. The co-operative societies will be responsible for hiring the tractors to settlers and for recovering the hire charges.

Pattern of assistance.—Financial assistance for implementing the scheme to be given to individuals as well as the co-operative society should be as follows :

	Loan Rs.	Grant Rs.
I. Individual members		
(a) Share capital	25	--
(b) Homestead plot and house	1,550	--
TOTAL	1,575	—

	Loan Rs.	Grant Rs.
II. Through the co-operative society		
(a) Drinking water supply	—	100
(b) Reclamation charges	1,100	—
(c) Maintenance expenses	600	—
(*d*) Follow-on cultivation (i) Bullocks and implements	1,000	—
(e) Administrative set-up	—	50
TOTAL ..	2,700	150

The loans for the purchase of bullocks, equipment, etc., should be recovered from the third year in 5 annual instalments with the rate of interest as for *taccavi* loans. The loans for the homestead plot and house building should be recovered from the 5th year in 15 annual instalments with the rate of interest as for *taccavi* loans. The occupancy price of land should be paid from the 6th year in 5 equated annual instalments.

Pattern II : Individually owned but jointly operated

The co-operative joint farming settlement envisages that the ownership of the land will vest in individuals, but cultivation will be carried on jointly.

Allotment of land.—The scale of allotment of land to individuals will be as indicated in Pattern I. The difference would be that the land, although owned individually, would be operated and managed jointly.

Method of working.—The society will formulate a production plan through its elected Managing Committee. The Managing Committee may formulate the day-to-day working plan for the members either by forming some special groups or on an *ad hoc* basis. The means of cultivation, *i.e.*, seeds, fertilisers, implements, bullocks, etc., will be drawn from the common pool of the society. In case any of the members have got their own bullocks, they could be taken on hire according to the local prevailing rates. The members would be paid wages for the work put in. In the initial stages, the amount of subsidy received from the Government towards the wages on labour, maintenance charges, etc., would be availed of for this purpose. The crop would be jointly harvested, and the sale proceeds would be disbursed among the members after deducting the expenditure incurred by the society.

The Agricultural Officer attached to a group of 5 societies will provide the necessary technical guidance with regard to the formulation of the production programme, rotation of crops, use of fertilisers, choice of improved seeds, etc. The day-to-day affairs of the society will be managed by a Committee elected annually by the members. The Manager of the society will keep the necessary accounts, etc.

The social amenities, reclamation charges, follow-on cultivation charges, maintenance expenses and administrative set-up for the organisation of this scheme will be the same as in Pattern I.

This pattern will also facilitate the undertaking of the follow-on cultivation.

Pattern of assistance.—All the assistance, except loans for homestead and social amenities, should be given to the society. In case the members wish to undertake the work of house building jointly, this may be entrusted to the society.

सत्यमेव जयते

APPENDIX VIII.

WITNESSES.

The following gentlemen have given evidence before the Committee or one of the Sub-Committees. The names are given in the order in which they appeared before the Committee:—

Sir Murdoch MacDonald, K.C.M.G., C.B., Adviser and Under-Secretary of State for Public Works in Egypt.

Mr. E. Bonham Carter, C.M.G., Legal Secretary to the Sudan Government.

Col. E. E. Bernard, C.M.G., Financial Secretary to the Sudan Government.

Mr. D. P. McGillivray, Manager, Sudan Plantations Syndicate.

Mr. J. Arthur Hutton, Vice-President, British Cotton Growing Association.

Mr. E. R. Sawer, Sudan Educational Department.

Sir Daniel Morris, K.C.M.G., late Imperial Commissioner, West Indian Agricultural Department.

Mr. Norris Dent, Managing Director of the Northern Rhodesian Cotton Company.

Mr. A. McClure, Assistant Director of Public Works in Uganda.

Mr. D. F. Basden, Chairman of the Uganda Company, Ltd.

Major E. H. M. Leggett, D.S.O., British East Africa Corporation.

Mr. F. H. Leakey, Uganda Cotton Ginning and Buying Company.

Mr. W. H. Johnson, Director of Agriculture, Southern Provinces, Nigeria.

Mr. J. P. Jones, Chairman of West African Section of the Liverpool Chamber of Commerce, and General Manager of the Lagos Stores, Ltd.

Mr. W. H. Himbury, Manager of the British Cotton Growing Association.

Mr. G. C. Dudgeon, C.B.E., late Consulting Agriculturist, Egyptian Government.

Mr. A. T. McKillop, Ministry of Agriculture Egypt.

Dr. E. J. Russell, F.R.S., Director of the Rothamsted Experimental Station, Harpenden.

Lt.-Col. B. F. E. Keeling, O.B.E., M.C., Surveyor General of Egypt, Chairman, Cotton Research Board.

Prof. W. Bateson, F.R.S., Director of the John Innes Horticultural Institution, Merton.

Major H. V. Gorle, D.S.O., South Africa.

Prof. J. B. Farmer, F.R.S., Professor of Botany, Imperial College of Science and Technology.

Prof. W. Roberts, Professor of Agriculture, Lyallpur, India.

Sir F. Lugard, G.C.M.G., C.B., D.S.O., late Governor-General, Nigeria.

Mr. H. S. Goldsmith, C.M.G., Lieutenant-Governor, Northern Provinces, Nigeria.

Sir H. F. Wilson, K.C.M.G., Chairman, North Charterland Exploration Co. (1910), Ltd., Secretary of the Colonial Institute.

Mr. J. S. J. McCall, Director of Agriculture, Nyasaland.

Mr. P. H. Lamb, Director of Agriculture, Northern Provinces, Nigeria.

Mr. H. St. J. B. Philby, C.I.E., Indian Civil Service.

Sir H. Hesketh Bell, K.C.M.G., Governor of Mauritius, late Governor and Commander-in-Chief of Northern Nigeria.

Mr. S. Simpson, Director of Agriculture, Uganda.

Mr. H. R. Palmer, First Class Resident, Northern Provinces, Nigeria.

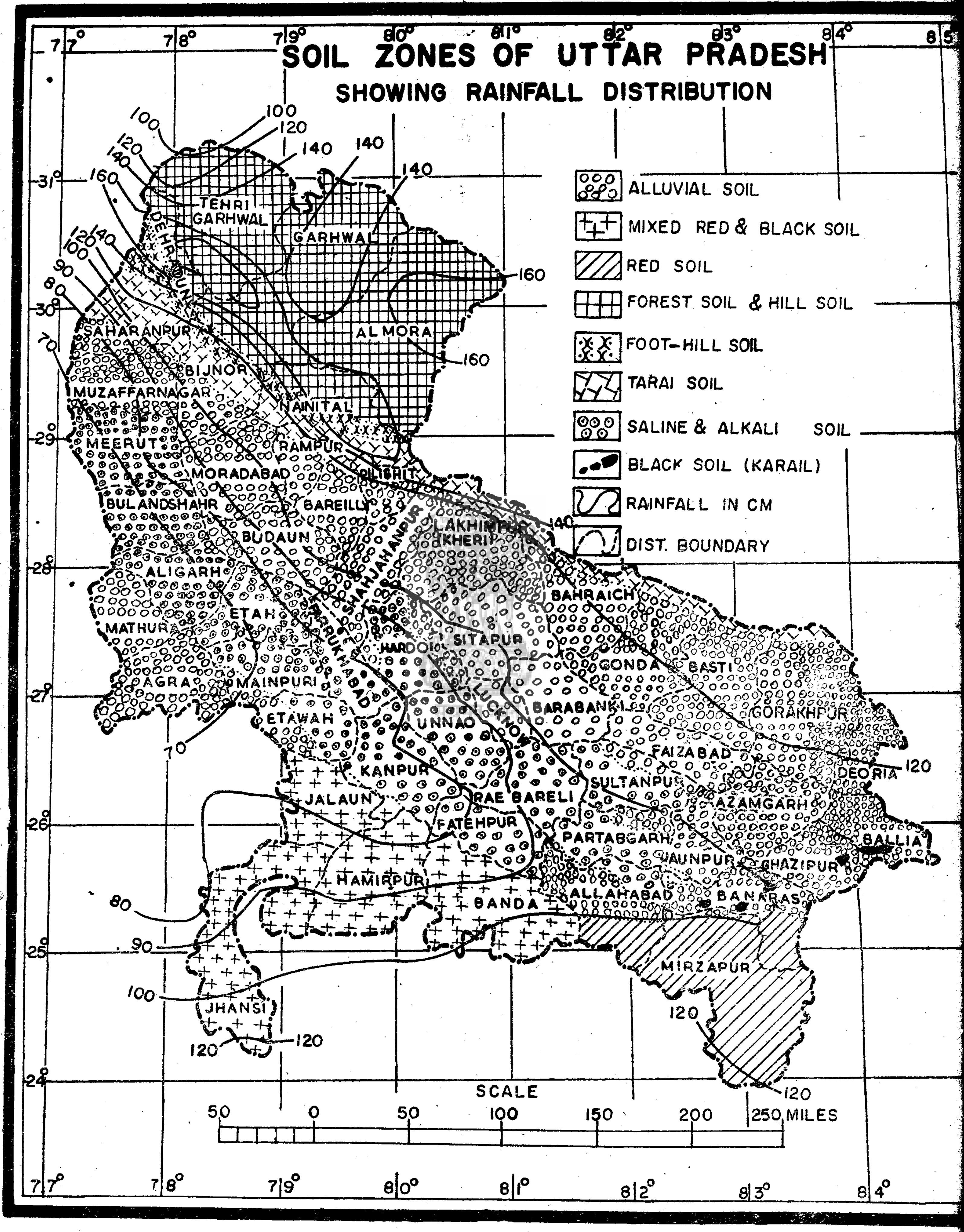
Mr. H. Martin Leake, Principal of the Agricultural College, Cawnpore, India.

Sir Francis Watts, K.C.M.G., Imperial Commissioner of Agriculture for the West Indies.

Captain R. Thomas, Indian Agricultural Service, Deputy Director of Agriculture (Research), Mesopotamia.

सत्यमेव जयते

MAP I


SOIL ZONES OF UTTAR PRADESH
SHOWING RAINFALL DISTRIBUTION
ALLUVIAL SOIL
MIXED RED & BLACK SOIL
RED SOIL
FOREST SOIL & HILL SOIL
FOOT-HILL SOIL
TARAI SOIL
SALINE & ALKALI SOIL
BLACK SOIL (KARAIL)
RAINFALL IN CM
DIST. BOUNDARY
TEHRI GARHWAL
GARHWAL
DEHRA DUN
ALMORA
SAHARANPUR
BIJNOR
MUZAFFARNAGAR
NAINITAL
MEERUT
RAMPUR
PILIBHIT
MORADABAD
BULANDSHAHR
BAREILLY
BUDAUN
LAKHIMPUR (KHERI)
SHAHJAHANPUR
ALIGARH
ETAH
FARRUKHABAD
BAHRAICH
MATHURA
HARDOI
SITAPUR
GONDA
BASTI
AGRA
MAINPURI
LUCKNOW
BARABANKI
GORAKHPUR
ETAWAH
UNNAO
FAIZABAD
DEORIA
KANPUR
SULTANPUR
JALAUN
RAE BARELI
AZAMGARH
FATEHPUR
PARTABGARH
BALLIA
JAUNPUR
GHAZIPUR
HAMIRPUR
ALLAHABAD
BANARAS
BANDA
MIRZAPUR
JHANSI
100
120
140
160
90
80
70
SCALE
50 0 50 100 150 200 250 MILES
77°
78°
79°
80°
81°
82°
83°
84°
85
31°
30°
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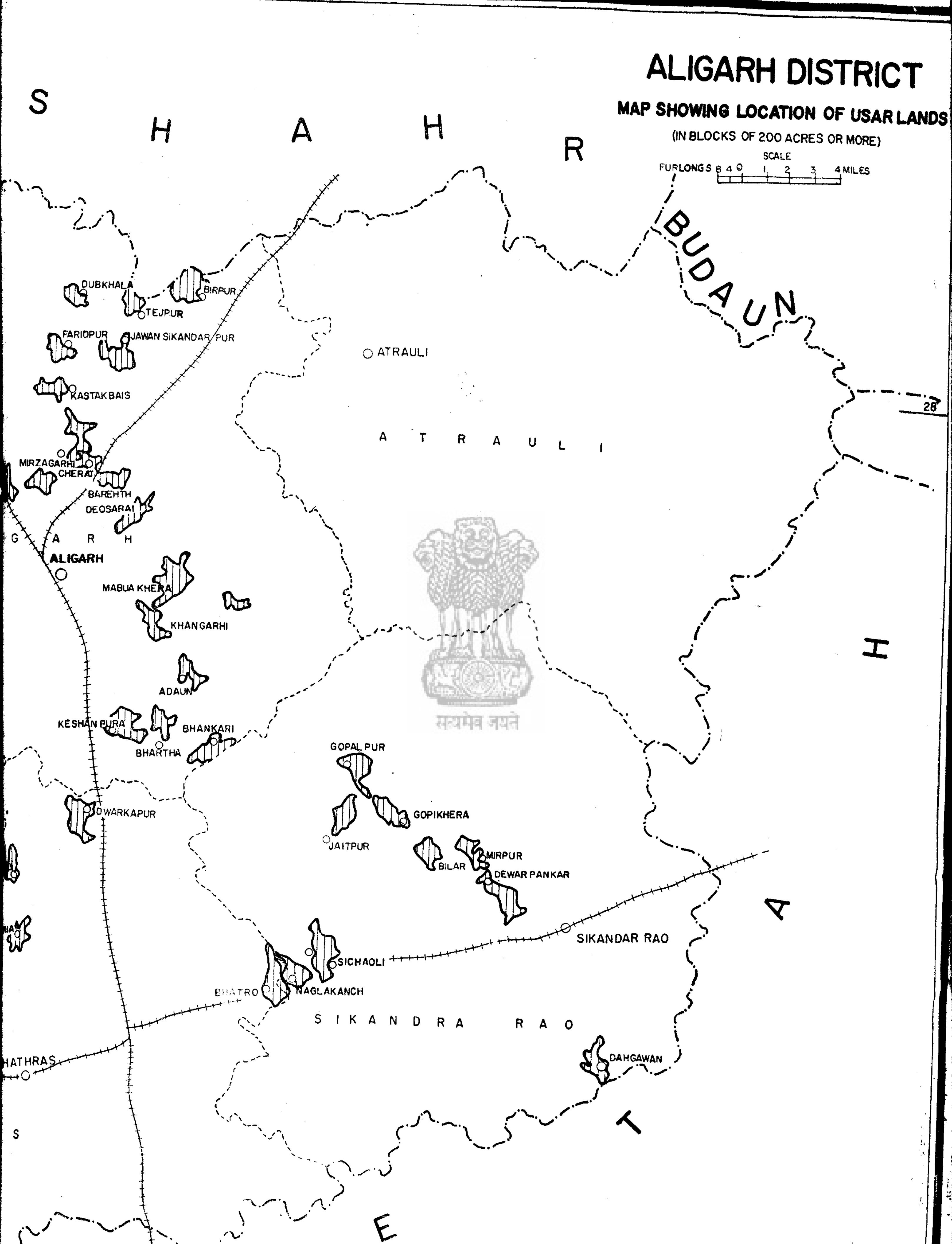
27°
26°
25°
24°

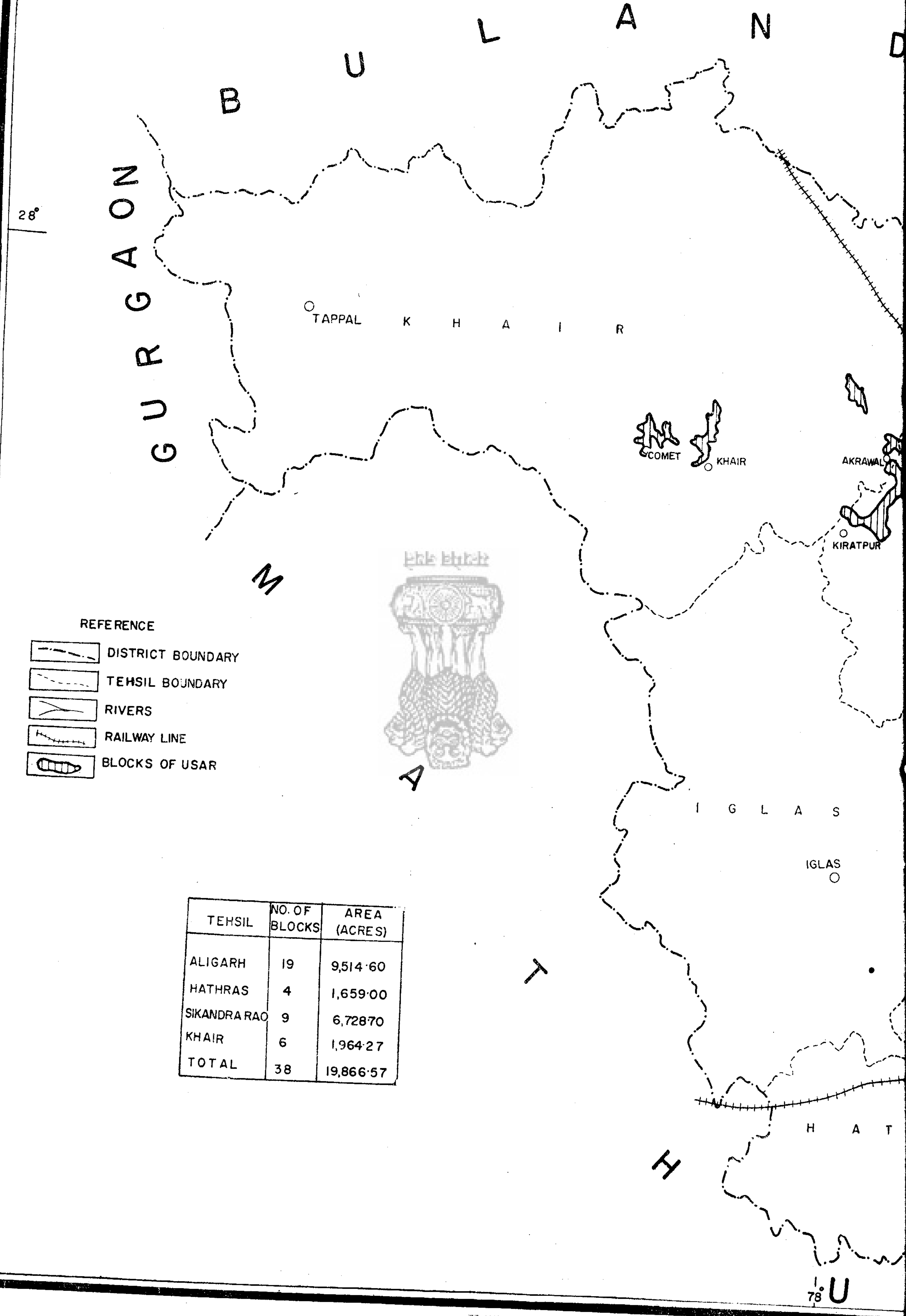
ALIGARH DISTRICT

MAP SHOWING LOCATION OF USAR LANDS

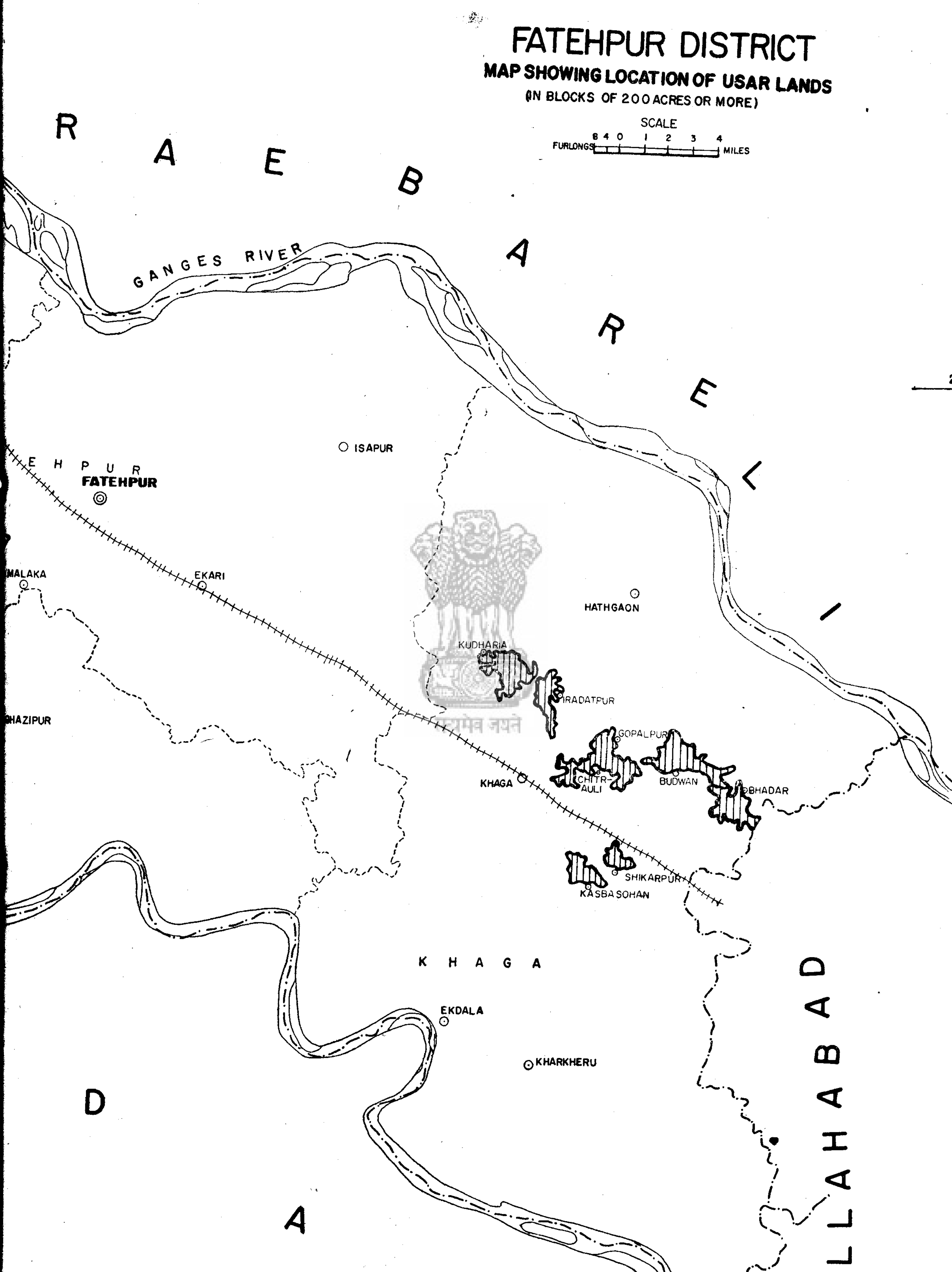
(IN BLOCKS OF 200 ACRES OR MORE)



सत्यमेव जयते



TEHSIL	NO. OF BLOCKS	AREA (ACRES)
ALIGARH	19	9,514·60
HATHRAS	4	1,659·00
SIKANDRA RAO	9	6,728·70
KHAIR	6	1,964·27
TOTAL	38	19,866·57

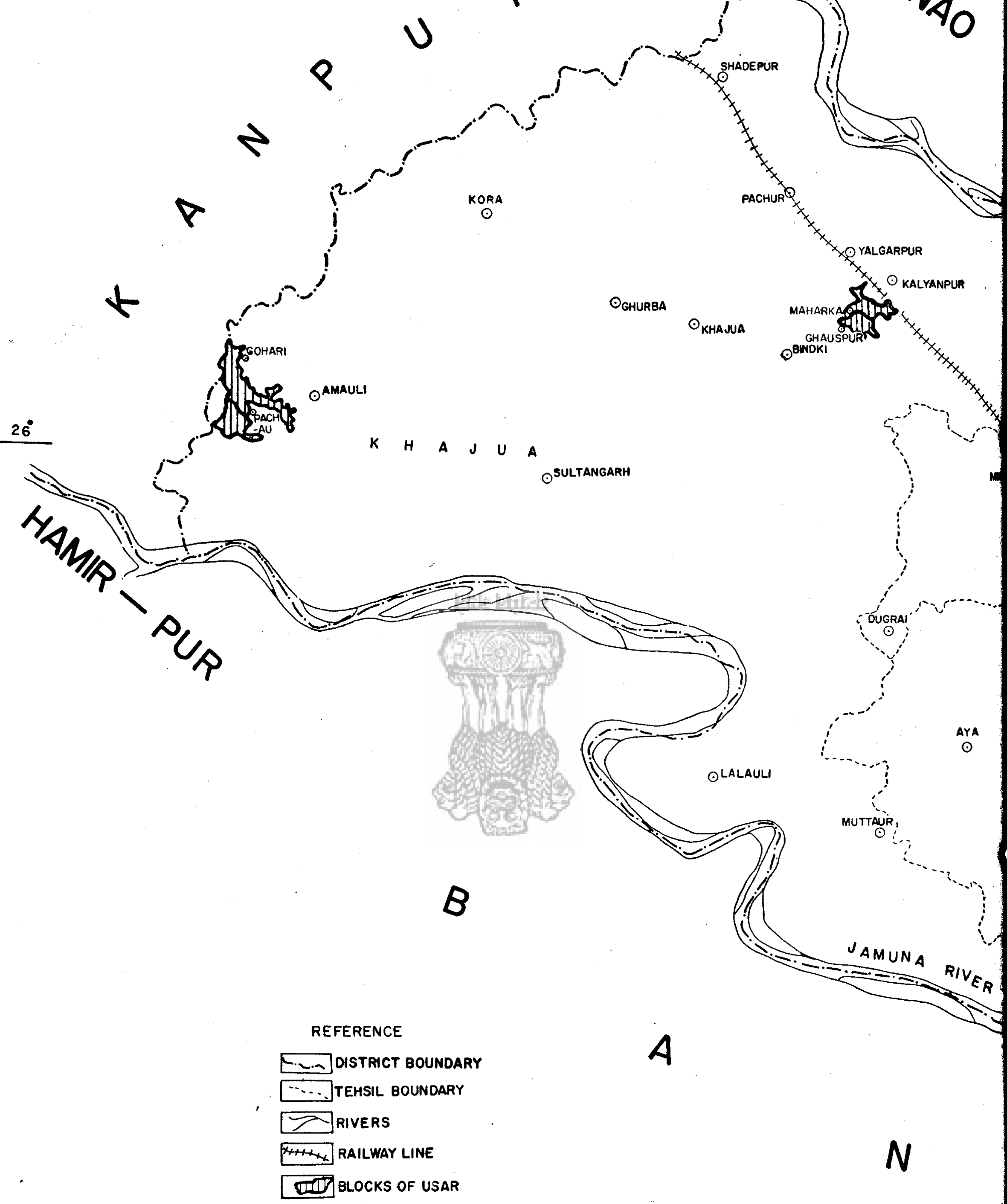


FATEHPUR DISTRICT

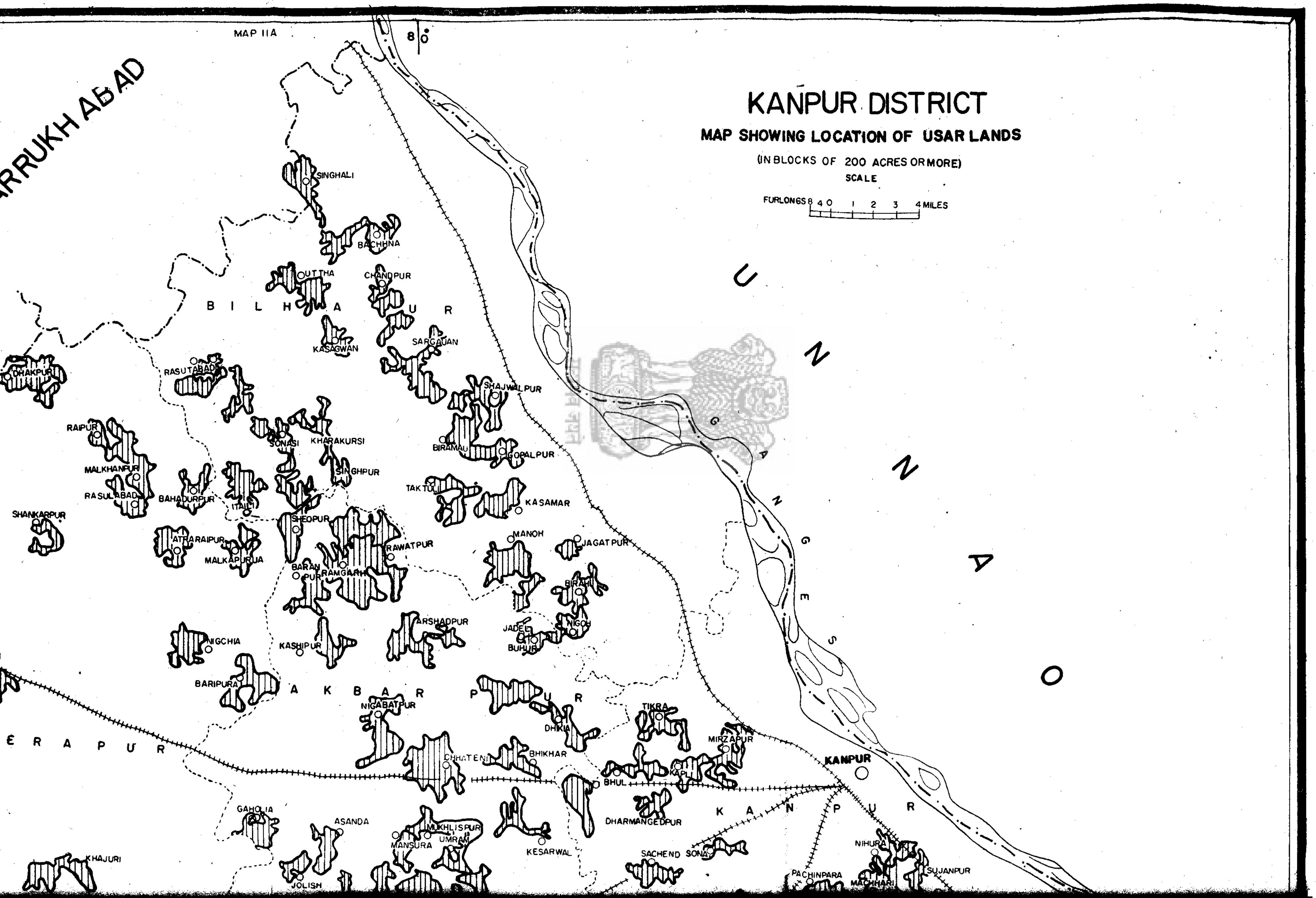
MAP SHOWING LOCATION OF USAR LANDS

(IN BLOCKS OF 200 ACRES OR MORE)

सत्यमेव जयते



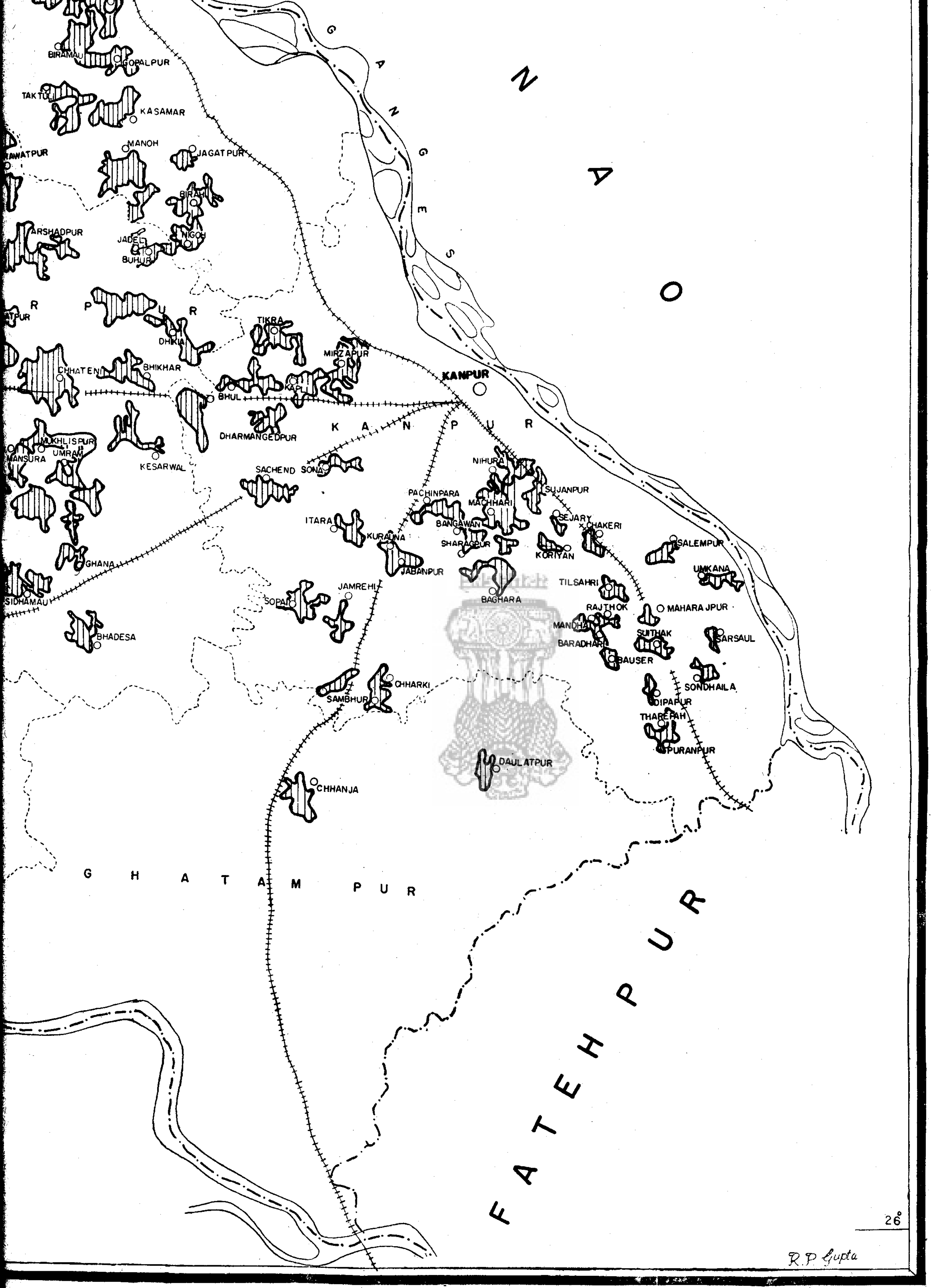
TEHSIL	NO. OF BLOCKS	AREA (ACRES)
FATEHPUR	1	631·44
KHAGA	7	4,339·93
KHAJUA	4	1,898·48
TOTAL	12	6,869·85

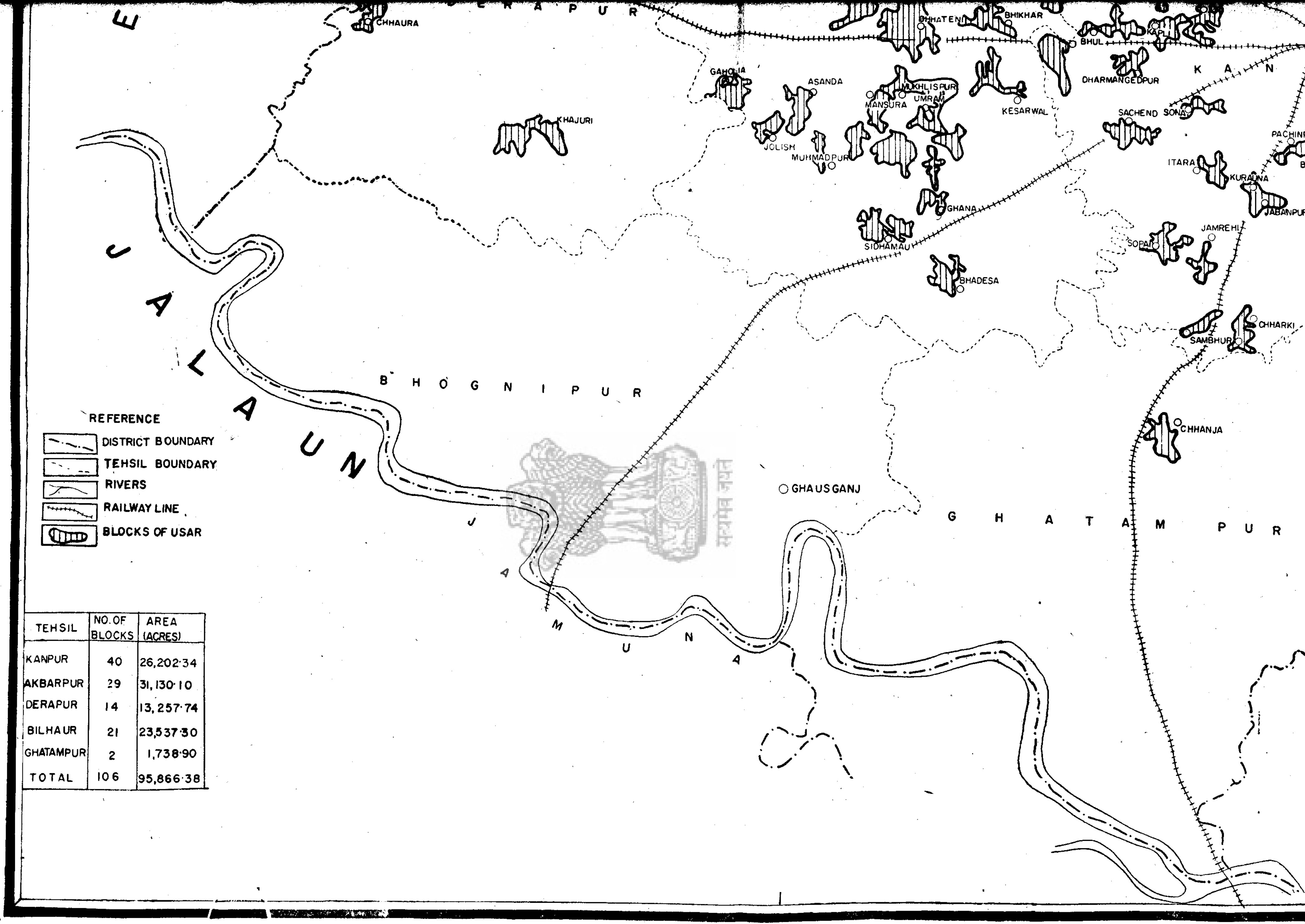


KANPUR DISTRICT

MAP SHOWING LOCATION OF USAR LANDS

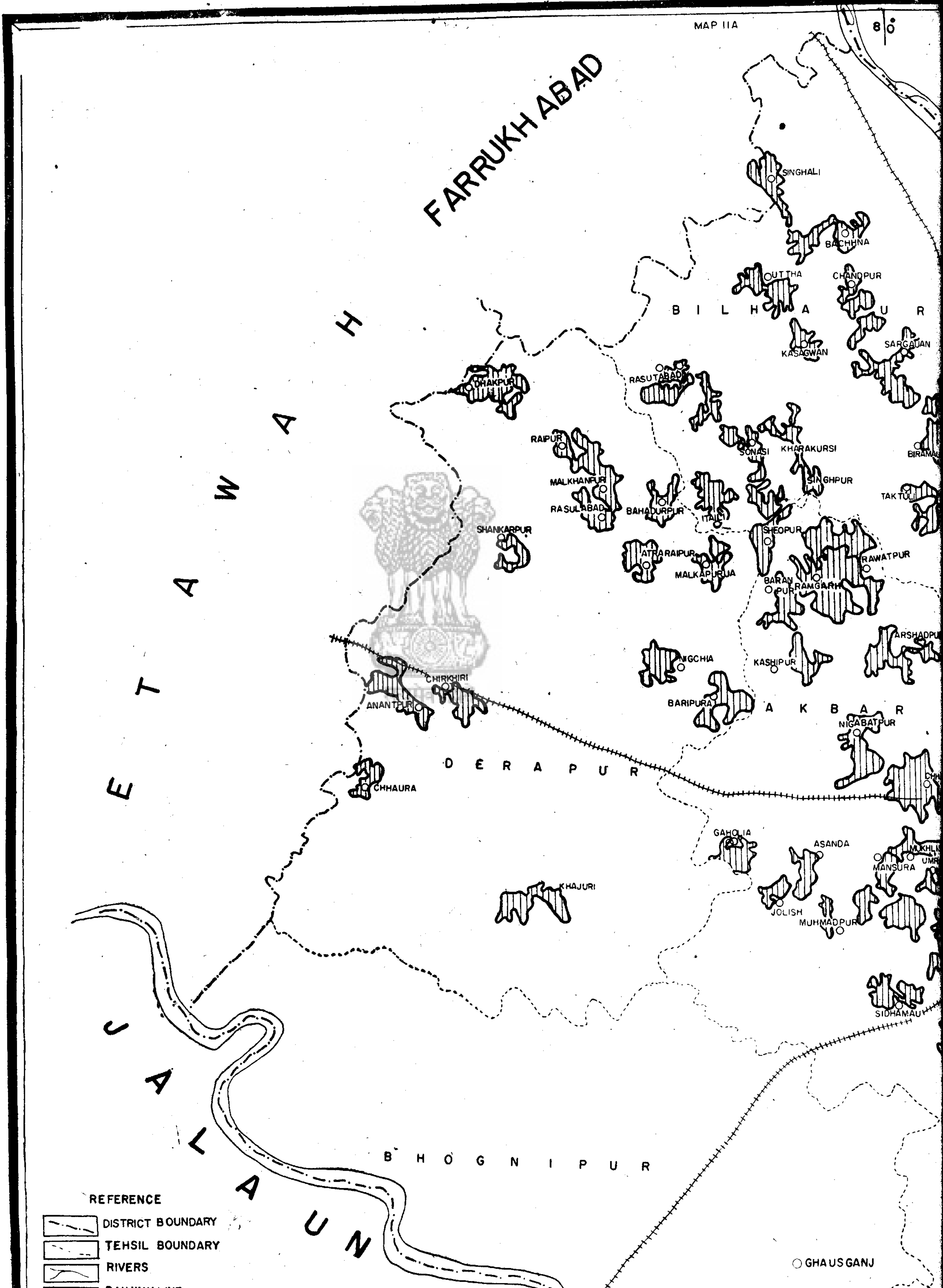
(IN BLOCKS OF 200 ACRES OR MORE)

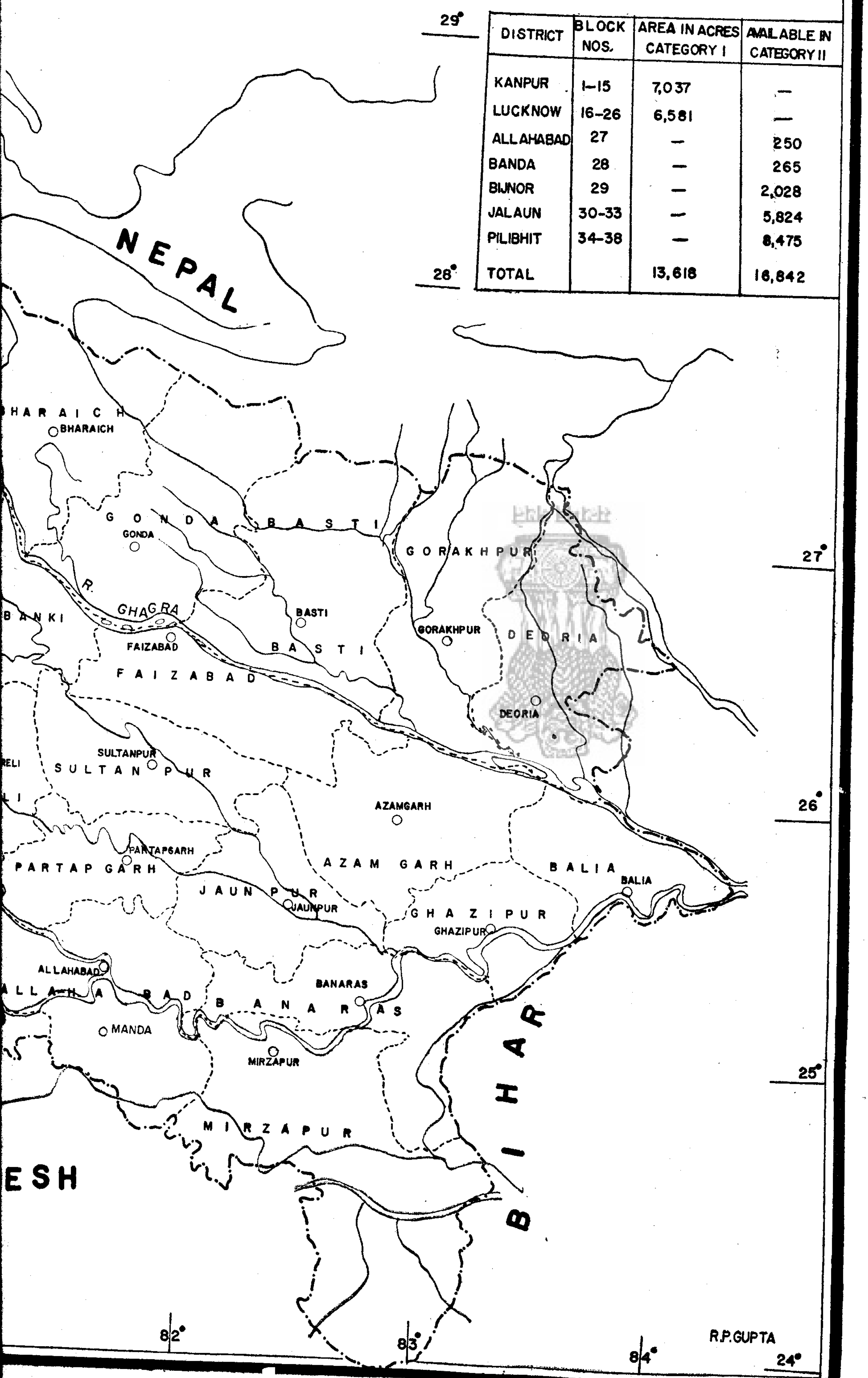

GANGES
O
A
N
O
KANPUR
K A N P U R
G H A T A M P U R
FATEHPUR
BIRAMAU
GOPALPUR
TAKTULI
KASAMAR
MANOH
JAGATPUR
AWATPUR
BIRAH
ARSHADPUR
JADELI
NIGOH
BUHUR
R P U R
ATPUR
TIKRA
DHIKIA
MIRZAPUR
CHHATENI
BHIKHAR
KAPLI
BHUL
DHARMANGEDPUR
MUKHLISPUR
UMRAM
MANSURA
KESARWAL
SACHEND
SONA
NIHURA
SUJANPUR
PACHINPARA
MACHHARI
ITARA
BANGAWAN
SEJARY
CHAKERI
KURAUNA
SHARAGPUR
KORIYAN
SALEMPUR
UMKANA
GHANA
JABANPUR
BAGHARA
TILSAHRI
JAMREHI
SOPAI
SIDHAMAU
RAJTHOK
MAHARAJPUR
MANDHA
SUTHAK
SARSAUL
BHADESA
BARADHARI
BAUSER
CHHARKI
SAMBHUR
SONDHAILA
DIPAPUR
THAREPAH
PURANPUR
DAULATPUR
CHHANJA
26°
R.P Gupta



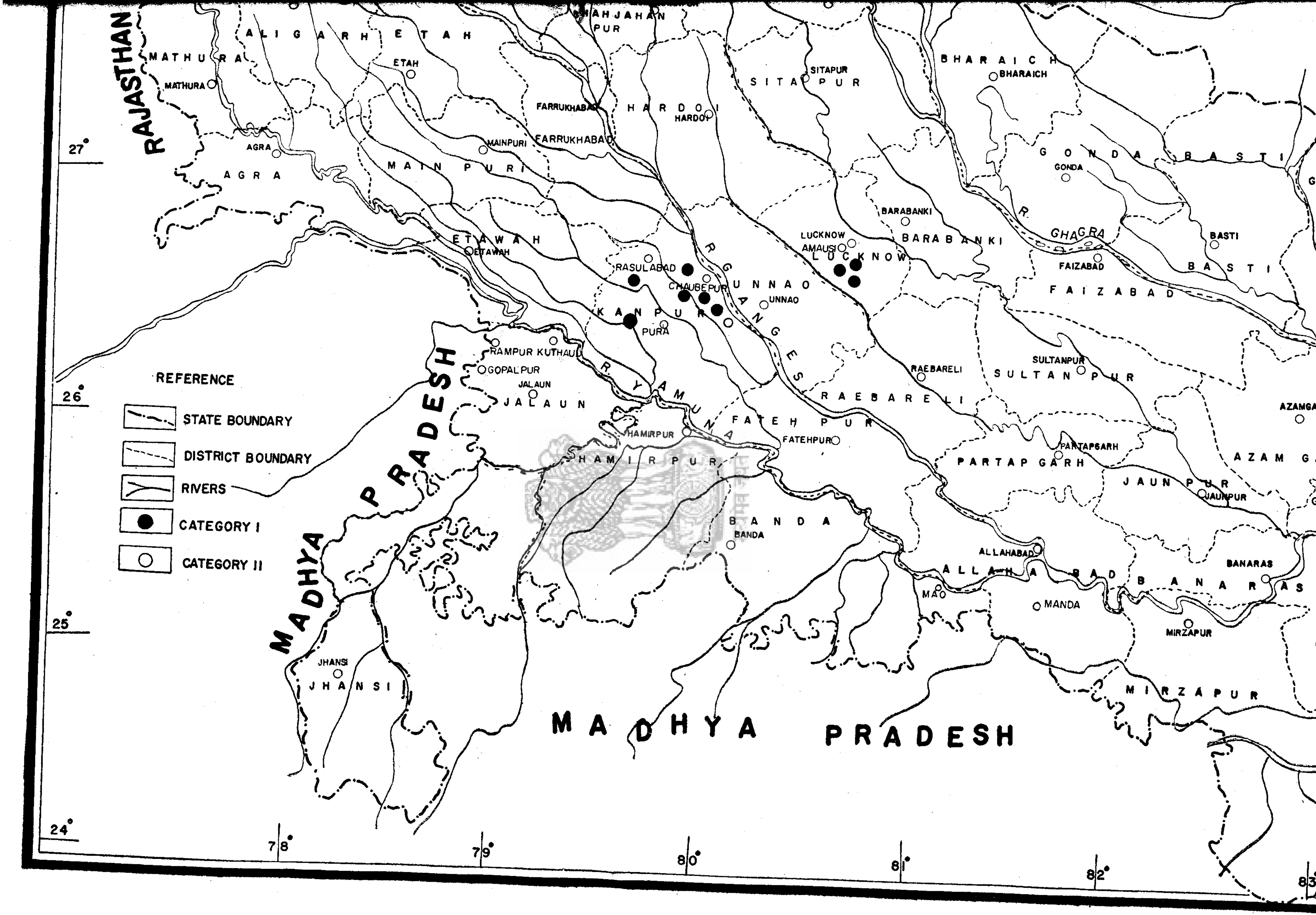
TEHSIL	NO. OF BLOCKS	AREA (ACRES)
KANPUR	40	26,202·34
AKBARPUR	29	31,130·10
DERAPUR	14	13,257·74
BILHAUR	21	23,537·30
GHATAMPUR	2	1,738·90
TOTAL	106	95,866·38

MAP IIA


80°
FARRUKHABAD
ETAWAH
JALAUN
BILHAUR
DERAPUR
AKBARPUR
BHOGNIPUR
SINGHALI
BACHHNA
OUTTHA
CHANDPUR
KASAGWAN
SARGAUAN
RASUTABAD
DHAKPUR
RAIPUR
SONASI
KHARAKURSI
BIRAMAU
MALKHANPUR
RASULABAD
BAHADURPUR
ITAILI
SINGHPUR
TAKTULI
SHANKARPUR
SHEOPUR
ATRARAIPUR
MALKAPURJA
RAWATPUR
BARAN PUR
RAMGARH
ARSHADPUR
NIGCHIA
KASHIPUR
CHIRKHIRI
ANANTPUR
BARIPURA
NIGABATPUR
CHHAURA
GAHOLIA
ASANDA
MANSURA
MUKHLI
UMRI
KHAJURI
JOLISH
MUHMADPUR
SIDHAMAU
GHAUSGANJ
REFERENCE
DISTRICT BOUNDARY
TEHSIL BOUNDARY
RIVERS



DISTRICT	BLOCK NOS.	AREA IN ACRES CATEGORY I	AVAILABLE IN CATEGORY II
KANPUR	1–15	7,037	—
LUCKNOW	16–26	6,581	—
ALLAHABAD	27	—	250
BANDA	28	—	265
BIJNOR	29	—	2,028
JALAUN	30–33	—	5,824
PILIBHIT	34–38	—	8,475
TOTAL		13,618	16,842


REFERENCE
STATE BOUNDARY
DISTRICT BOUNDARY
RIVERS
CATEGORY I
CATEGORY II
RAJASTHAN
MADHYA PRADESH
MADHYA PRADESH
MATHURA
AGRA
ALIGARH
ETAH
MAINPURI
FARRUKHABAD
HARDOI
SITAPUR
BHARAICH
GONDA
BASTI
BARABANKI
LUCKNOW
AMAUSI
UNNAO
RASULABAD
CHAUBEPUR
KANPUR
PURA
ETAWAH
RAMPUR KUTHAUL
GOPALPUR
JALAUN
HAMIRPUR
BANDA
FATEHPUR
RAEBARELI
SULTANPUR
FAIZABAD
PARTAPGARH
JAUNPUR
AZAMGARH
ALLAHABAD
MAO
MANDA
BANARAS
MIRZAPUR
JHANSI
SHAHJAHANPUR
R. GANGES
R. YAMUNA
R. GHAGRA
24°
25°
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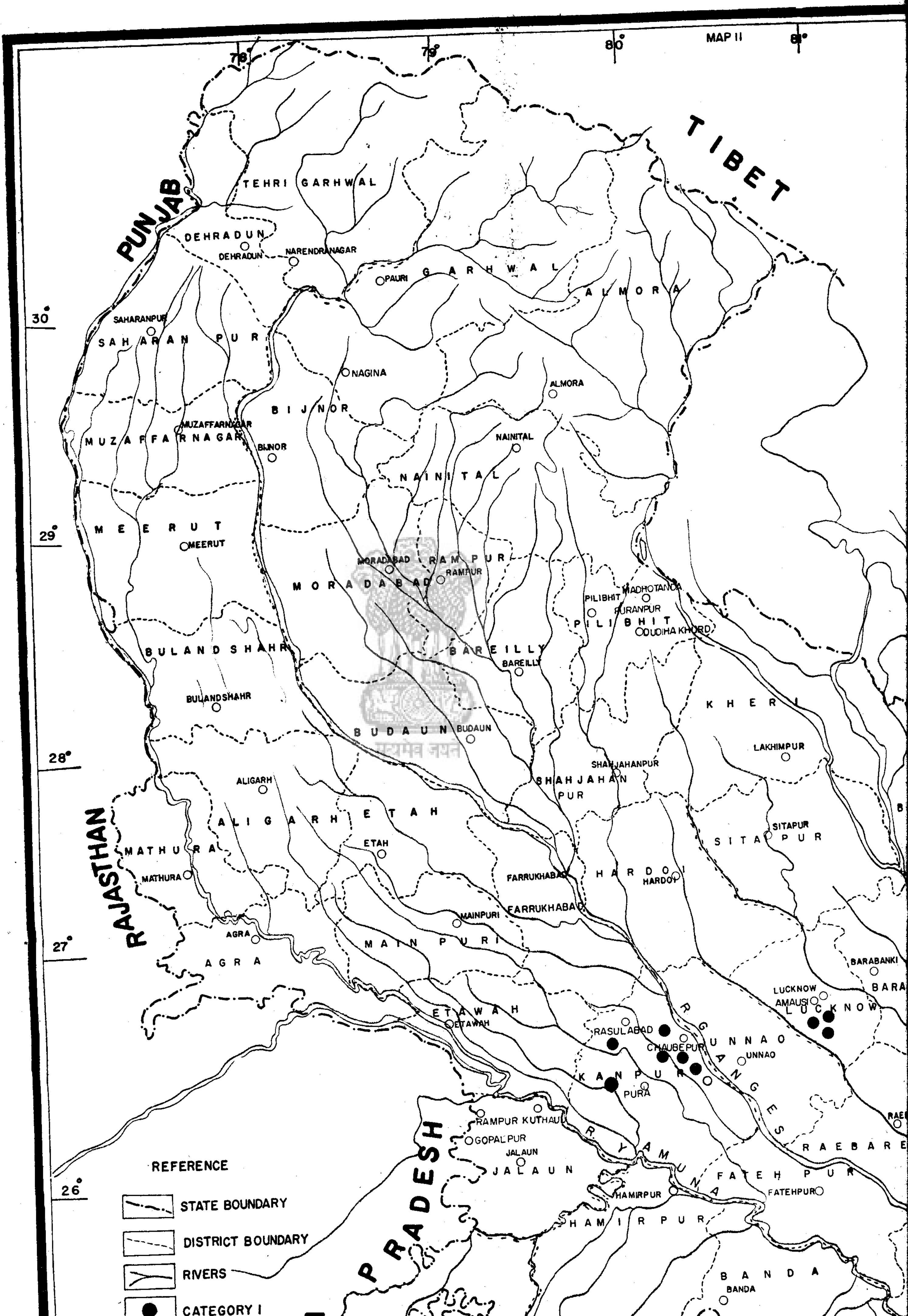
27°
78°
79°
80°
81°
82°
83°

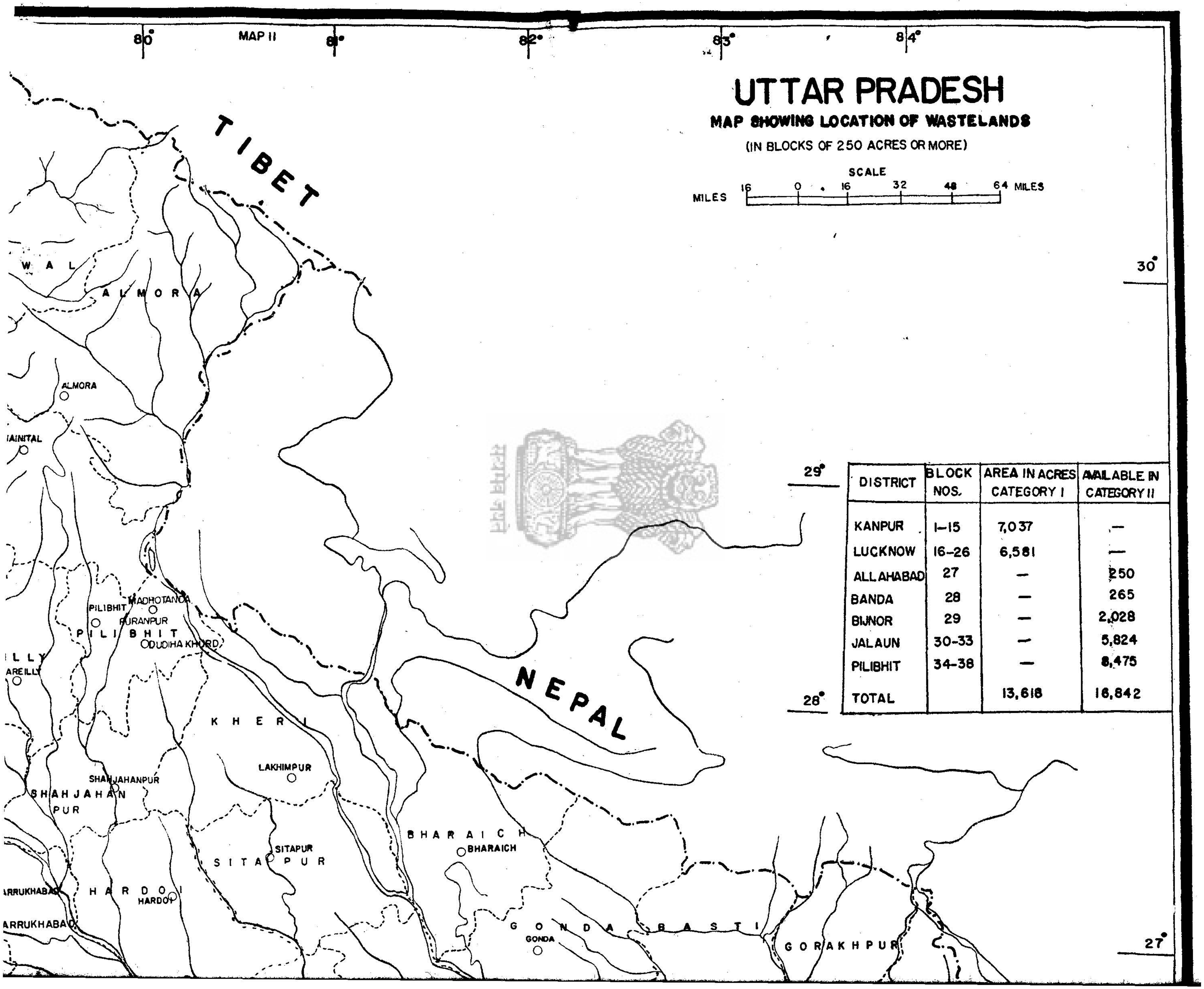

MAP II
78°
79°
80°
81°
30°
29°
28°
27°
26°
TIBET
PUNJAB
RAJASTHAN
PRADESH
TEHRI GARHWAL
DEHRADUN
DEHRADUN
NARENDRANAGAR
PAURI
GARHWAL
ALMORA
ALMORA
SAHARANPUR
SAHARANPUR
NAGINA
BIJNOR
BIJNOR
MUZAFFARNAGAR
MUZAFFARNAGAR
NAINITAL
NAINITAL
MEERUT
MEERUT
MORADABAD
MORADABAD
RAMPUR
RAMPUR
PILIBHIT
MADHOTANDA
PURANPUR
PILIBHIT
DUDIHA KHURD
BULANDSHAHR
BAREILLY
BAREILLY
BULANDSHAHR
KHERI
BUDAUN
BUDAUN
LAKHIMPUR
SHAHJAHANPUR
ALIGARH
SHAHJAHANPUR
ALIGARH
ETAH
SITAPUR
SITAPUR
MATHURA
ETAH
MATHURA
FARRUKHABAD
HARDOI
HARDOI
MAINPURI
FARRUKHABAD
AGRA
MAINPURI
AGRA
BARABANKI
BARA
LUCKNOW
AMAUSI
LUCKNOW
ETAWAH
ETAWAH
RASULABAD
CHAUBEPUR
UNNAO
UNNAO
GANGES
KANPUR
PURA
RAMPUR KUTHAUND
GOPALPUR
JALAUN
JALAUN
YAMUNA
FATEHPUR
FATEHPUR
RAEBARELI
HAMIRPUR
HAMIRPUR
BANDA
BANDA
REFERENCE
STATE BOUNDARY
DISTRICT BOUNDARY
RIVERS
● CATEGORY I

MAP II

UTTAR PRADESH

MAP SHOWING LOCATION OF WASTELANDS

(IN BLOCKS OF 250 ACRES OR MORE)



DISTRICT	BLOCK NOS.	AREA IN ACRES CATEGORY I	AVAILABLE IN CATEGORY II
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